



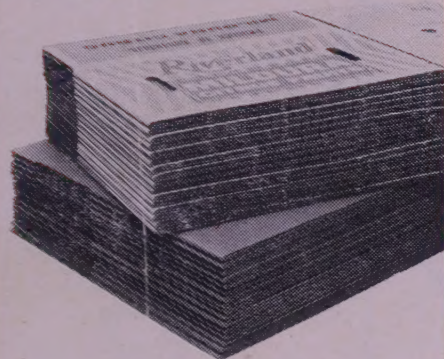
HC 362

Australian Citrus News

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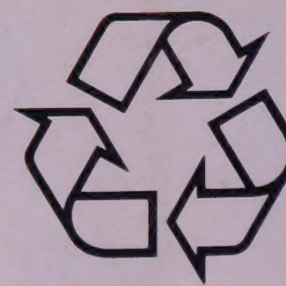
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EDITOR'S NOTE

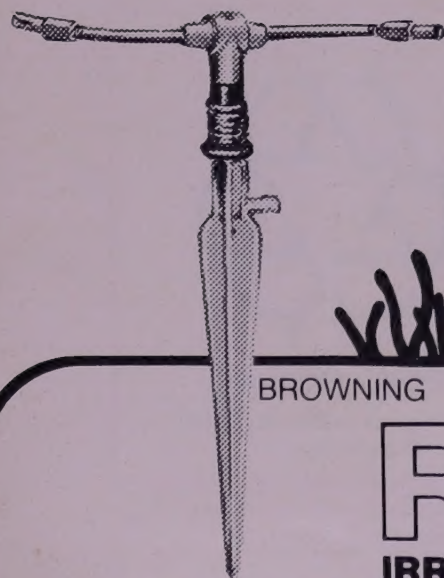
The horticultural industry is being disadvantaged by the present fuel pricing policy compared to other sections of the economy.

It is estimated that for each \$100 increase in a grower's fuel bill he can expect an overall increase in his cash costs of production in the order of \$500 due to the multiplying effect of fuel costs on the price of farm inputs such as fertilizers, chemicals, plastics, freight etc.

(Continued on page 7)

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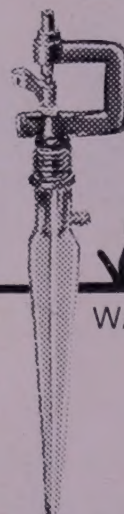
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THE AUSTRALIAN CITRUS NEWS

the official organ of
AUSTRALIAN CITRUS GROWERS'
FEDERATION

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INDUSTRY DOINGS

As from Monday, February 11, 1980, the office of the Australian Citrus Growers Federation (ACGF) will be situated at Room 107 on the 10th Floor of 118 King William Street, Adelaide.

The move has become necessary due to extensive renovations being undertaken to the T & G Building. There will be no alteration to the ACGF phone number.

The ACGF Working Committee will meet on Thursday February 14, 1980 in Sydney for discussions on a number of matters requiring attention prior to commencement of the 1980/81 citrus season. These will include the proposals for a Research and Promotion Foundation and several matters pertaining to FISCC pricing and terms and conditions for 1980/81.

ACGF representatives will also meet with the Executive Committee of the Australian Citrus Processors Association on Friday, February 15, and this meeting will be followed by a meeting of the Australian Citrus Industry Council.

A Citrus Export Industry Conference will be held in Melbourne on Thursday, March 13, 1980 to identify any problems associated with the export of fresh citrus during the 1979/80 season and to formulate any necessary corrective action.

It is expected that the Conference will be attended by the Chief Fruit Officer (Exports) of the Department of Primary Industry, Mr. Bill Bettenay; Mr. Ian Peggie, Senior Research Officer (Cool Storage) Victorian Department of Agriculture; Mr. G. L. Edwards, Australian Fruit Officer, London, 1979; Mr. J. W. Turpin, Australian Fruit Officer, South East Asia, 1979; other State Departmental Officers associated with the export of citrus fruits; Exporters; Packers and Growers.

The 32nd Annual Conference of the Australian Citrus Growers Federation will be held at the Wayamba Holiday and Convention Centre, Alexandra Headland, Sunshine Coast, Sueensland, on Monday and Tuesday, May 12 and 13, 1980.

The Conference Dinner will be held on the Tuesday evening (May 13) and arrangements will be made for a one-day tour on the Wednesday (May 14) to a

local Horticultural Research Station, a citrus processing plant, citrus farms and other points of interest in the district.

Special arrangements will be made to entertain the ladies on the Monday and Tuesday by showing them some of the tourist attractions on the Sunshine Coast.

Mr. Bob Poignand has been appointed Assistant Secretary of the Citrus Organisation Committee of South Australia and in this capacity he will assist Mr. Max Pettman, the Secretary, with the administrative responsibilities of the Committee.

Mr. Poignand's background has been in the Accounting/Secretarial field and includes a period of eight years on the staff of the Waikerie Co-operative Producers Ltd.

A former President of ACGF, Mr. John Medley, O.B.E. of Adelaide, has been a patient in the Repatriation General Hospital at Daw Park since early December suffering from a bone disease.

Latest information is he expects to be home again by the end of January.

During his stay in hospital he celebrated his 86th birthday.

All his many friends in the citrus industry will join with A.C. News in wishing John an early return to good health.

John was President of AGCF in 1960/61.

Mr. Frank Gill, President of the Australian Dried Fruits Association, was awarded an O.B.E. by Her Majesty the Queen in the New Years Honours List for his services to the Australian Viticultural Industry.

Frank is well-known to many people in the citrus industry and our congratulations go to him for this much deserved award.

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ANSWER TO ENERGY CRISIS A LEMON

English amateur inventor, Anthony Ashill, has his own answer to the energy crisis — lemons.

He claims to have kept a small electric motor running continuously for five months on the power of one lemon.

As Mr. Ashill said, "If you can do that with just one lemon, think what you could do with a whole sackful".

He feels that with a bit more research, a grapefruit-powered transistor would not be out of the question.

He explained: "In my schooldays we were told that if you put two electrodes, one of copper and one of zinc, into acid you get an electric current.

"I decided to see if it would work with a lemon, so I attached an old copper halfpenny to one end and a piece of zinc to the other.

"Then I wired them up to a tiny electric motor. That was last July, and it's still running on the same lemon. It gives out 1.5 volts".

An electrical engineering expert at Aston University, Birmingham, said it was possible to create a small electrical current by dipping two dissimilar metals into a weak acid solution.

—Adelaide "Advertiser" 4-1-80.

One Spray Stops Red Scale

By RALPH CADMAN, Victorian Department of Agriculture, Mildura

For the first time in many years red scale has shown up as a problem in district citrus orchards. In many cases summer oil sprays will be required to control these outbreaks. However, where growers are considering spraying, they should be aware that in most situations we are now recommending only one oil spray in early February, instead of the traditional two-spray programme in December and February.

Red Scale problems developed this year during January when the district experienced heat-wave conditions over an eight day period. Temperatures in excess of 40°C caused heavy mortalities in scale parasite populations, allowing red scale to breed unchecked.

It is fortunate that mild autumn conditions helped the parasite population to re-establish. The present situation is that although parasitization of adult scale is good, numbers of unparasitized scale still exist and represent a source of infection for next season's crop.

CHANGES TO RECOMMENDATIONS

The need to change summer oil spray recommendations from a two-spray to a one-spray programme, is due to the effectiveness of the current biological and parasite monitoring programme run by the Department of Agriculture.

By waiting until early February to make the decision whether to spray or not, growers can wait and see what affect

January's temperatures will have on district parasite numbers. If temperatures are not too hot and sufficient parasites survive through to February, then spraying may not be necessary. However, if the opposite happens, then growers will be recommended by the Department of Agriculture at that time to spray.

The one spray programme is for those citrus growers who will have picked all of this season's fruit from their trees by early February. The only exception is for those growers who will be withholding valencias past early February. They should apply the old two-spray programme. The December application will reduce any carry-over population of first generation scale into February, when a decision can be made on whether a second spray will be required or not.

CHOICE OF OILS

In the past, citrus growers have used either mayonnaise or summer superior oils, however recent research in the South Australian Riverland has shown that these types of oils have contributed to considerable crop quality losses as well as foliage damage.

Special light or narrow range oils have been found to effectively kill scale without damaging trees or crops. These are classified as 60 S.U.S. or 60 second oils, which refers to their actual molecular weight. Because of their lightness, 60 second oil can safely be sprayed twice per year and at any time during the year. Limited supplies of this oil is the biggest problem.

The use of heavier, broad range or 80 S.U.S. (80 second oils) such as mayonnaise or summer superior oils were shown to be safest, only when sprayed once per year, between November and early February.

OIL APPLICATION

The limiting feature with 60 second oils is their instability in solution. Unless spray tank agitation is excellent then these oils have a tendency to settle out of the suspension. If this happens then these oils may be sprayed as a concentrate oil mixture, causing severe damage to fruit and foliage.

The application rate of 60 second oils is less than 80 second oils and is usually in the range of 1.3 to 1.5 litres per 100 litres of water.

To obtain 100 per cent coverage of all foliage, which is necessary for successful red scale control, then oscillating boom spray units still do the best job.

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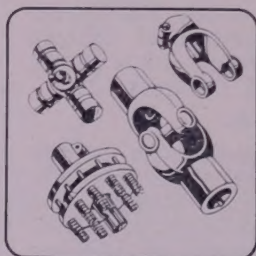
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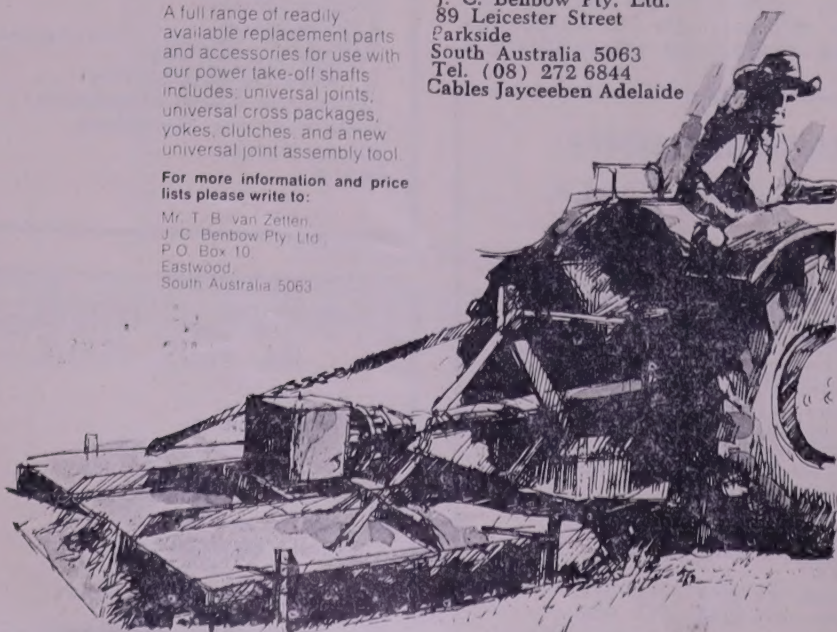
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AUSTRALIAN CITRUS NEWS

INDUSTRY DOINGS

(Continued from page 3)

Brian Wild has returned to Australia after completing his PhD degree at the University of California.

Before undertaking his overseas studies Brian was Officer-in-Charge of the Gosford Horticultural Postharvest Laboratory.

His research programme in California was associated with investigations into the mechanism of resistance development by citrus green mould to benzimidazole fungicides, such as Tecto 90, Benlate, Topsin M and Bavistin.

ACGF contributed an amount of \$750 over a period of three years to assist Brian with his overseas studies.

January, 1980

HORTICULTURAL TOUR OF SOUTH AFRICA

The Central Coast Agricultural Research and Extension Committee at Gosford, NSW, is organising a 28-day tour of South Africa to take place in June, 1980.

The proposed tour, which is being co-ordinated through Dr. Doug Stanton of the South African Co-operative Citrus Exchange, will include visits to horticultural areas and game reserves.

The estimated cost is expected to be approximately \$2,500, which will cover all travel, accommodation and three meals a day. All personal expenses will be additional.

The suggested itinerary is as follows:

PROPOSED ITINERARY

At present flights from Australia arrive in South Africa on either Tuesday or Saturday nights. Assume a Saturday arrival.

WEEK I

Sunday Monday Rest. Sightseeing Pretoria and Johannesburg area.

Wednesday Drive to Zebediela Citrus Estate — largest citrus estate in South Africa, producing approx. 65,000 tons of citrus p.a. Overnight Magoebaskloof Hotel.

Tuesday Tzaneen area. Letaba Estate — 400,000 citrus trees, also growing bananas and mangos.

Thursday Westfalia Estate — large avocado and timber growers. Sapekoe Estate — tea growers. Smaller citrus farms in Letsitele area. Overnight at Magoebaskloof Hotel.

Friday Drive into Kruger Park Game Reserve. Overnight Olifants River Camp.

Saturday

WEEK II

Sunday Game Reserve. Overnight Skukuza Camp.

Monday Leave Game Reserve via Crocodile Bridge Gate. Drive through sugarcane, citrus and vegetable producing area to Nelspruit. Overnight Drum Rock Hotel or Pine Lake Inn.

Tuesday

Visit estates growing citrus, sub-tropical fruits, nuts and vegetables, and co-operative packinghouses, citrus processing plant, Citrus and Sub-tropical Fruit Research Institute (Dept. of Agriculture) and Outspan Citrus Centre (Citrus Exchange Research). Visit to important banana growing area can also be included if wanted. Same hotel.

Wednesday Scenic drive to Sabie, Graskop, Pilgrims Rest (old gold-mining town, now historic monument), and Blyde River Canyon. Outstanding mountain scenery. Same hotel.

Thursday Continue Tuesday's programme in the morning. Drive to Mbabane, Swaziland in afternoon. Overnight Holiday Inn.

Friday Swaziland. Mbabane market. Scenic drives. Resting in attractive surroundings.

Saturday Drive to Pongola Irrigation area. Visit Mvutshini Estate. Citrus and sugarcane grower. Overnight Holiday Inn at Hluhluwe.

WEEK III

Sunday Drive to Durban through cotton, timber and sugarcane growing areas. Durban and surroundings.

Monday One of South Africa's main holiday resorts. Cosmopolitan population. Scenic drives, places of interest and sea swimming. Mt. Edgecombe sugar research station if interested. Hotel to be selected later.

Thursday a.m. Fly to Port Elizabeth. p.m. Visit Sundays River citrus growing area. Much like Murray River area. Only more saline! Hotel selected later.

Friday

Drive via Garden route to Oudtshoorn. Overnight Holiday Inn at Wilderness or Oudtshoorn.

Saturday

Visit Cango caves and ostrich farm.

WEEK IV

Sunday Drive to Cape Town through wheat and deciduous fruit-growing areas. (Visit to important vegetable-growing area near George could be arranged at expense of one day elsewhere). Hotel to be selected later.

Monday Cape Town and surrounding area. Very picturesque area. Main wheat, deciduous fruit, and wine growing area. Also citrus, mainly lemons. Various visits to research stations, estates and farms, scenic drives and numerous places of interest etc. can be arranged. Cableway to top of Table Mountain. Same hotel.

Friday Fly to Johannesburg.

Saturday Johannesburg.

Sunday Johannesburg. African mine dancing.

Monday Return to Australia.

Bookings can be made completing the form below and returning it to the CCAREC with a deposit of \$200 by not later than February 29, 1980. Phone enquiries can be made to (043) 250 247.

HALT ON THE DARLING

The NSW Water Resources Commission has called a halt to the issue of irrigation licences for irrigators on the Lower Darling River.

A statement from the Commission's Sydney office says applications for licences lodged after November 30 last year, for irrigation entitlements on the Darling downstream of Lake Wetherell will not be granted.

Lake Wetherell is the most northern of the Lakes at Menindee. Chief Commissioner of the Water Resources Commission, Mr. J. B. Cunneen, who made the announcement said the NSW Minister for Water Resources, Mr. Gordon, concurred in the action.

Mr. Cunneen said that a review of the commitment of water available to NSW from the Menindee Lakes storage, carried out by the Commission last April, indicated that a temporary relaxation of the embargo on licences on the Lower Darling would be possible.

The embargo had been announced in October, 1977. However, the Commission had now established that when the licence applications received in the past six months had been processed the demand on the available resources would approach the level of supply available to NSW under the provisions of the River Murray Waters Agreement.

Mr. Cunneen said the action in calling a halt to the issue of licences for any new applications was necessary to protect the interests of existing irrigators on the Lower Darling.

SOUTH AFRICAN TOUR — JUNE, 1980

Mrs. H. Wilkinson,
Secretary,
CCAREC,
P.O. Box 362,
GOSFORD, N.S.W. 2250

I/We wish to make a booking for persons to participate in the Horticultural Tour of South Africa in June, 1980.

NAMES (1)
(Please (2)
print) (3)

I/We enclose a cheque for \$200 as deposit.

(Signed)

Address

Phone No.

RECORD VALENCIA CROP FORECAST

The 1979/80 Australian Valencia orange crop is currently forecast at the record level of 249,000 tonnes, compared with the estimated 226,000 tonnes harvested last season.

The figure is based on information provided by ACGF member organisations and State Departments of Agriculture.

However, fruit size is on the small side and juice and soluble solids yield is also expected to be below the high levels obtained in the 1978/79 season. These factors are expected to reduce the effective volume of the crop to similar levels as the previous year.

The small fruit will increase growers' harvesting costs.

The 1979/80 Navel orange crop has been estimated at 130,000 tonnes (132,000 tonnes in 1978/79), Lemons 42,700 tonnes (43,500 tonnes in 1978/79), Mandarins 27,800 tonnes (27,200 tonnes in 1978/79), and Grapefruit 26,600 tonnes (26,500 tonnes in 1978/79).

The total forecast citrus crop for 1979/80 is 480,000 tonnes compared with 459,000 tonnes in 1979/80.

Current demand for Valencia oranges for processing is strong and with a buoyant export fresh fruit market during the early part of the Valencia season, it is not expected that growers will have any trouble in disposing of their crop.

New President for A.H.G.C.

ACGF General Secretary, Hugh Cope, has been elected President of the Australian Horticultural Growers Council for 1979-80.

The Council represents producers of the majority of horticultural commodities in matters of common interest to these commodities and is the political wing of horticultural growers on such matters.

The gross value of horticultural farm production in Australia is estimated at over \$750 million.

Mr. Cope's election as President followed on the retirement of Mr. Don Kidd, Chairman of C.O.D. in Queensland, who has been President since the inception of the Council in 1976.

Mr. Cope has been associated with the administration side of the Australian Horticultural Industry for 30 years. This association has covered both the growing and processing sections of the industry.

Speaking after his election Mr. Cope said the formation of the Council in 1976 had been a major step in bringing the widely diversified horticultural industry together into the one body.

He said a major function of the Council was to ensure that Governments and Statutory Bodies such as the Industries Assistance Commission were fully aware of the importance

of the fruit and vegetable producing industry to the Australian community and the need for adequate protection and assistance to help maintain efficient and viable horticultural industries.

He said that with the constant reference by media, by Governments and by the I.A.C. to the need to lower the levels of tariff protection, the Council had an important role to play to ensure that food commodities produced from the soil, such as fruit and vegetables, were not treated on a similar basis to industrialised products.

Although B.A.E. estimates indicated that farm income was up this year, the horticultural sector was, generally speaking, not sharing in the improved situation. Gross returns for some commodities were up slightly on previous years but increased labour costs and rises in transport, fertilizer and marketing costs brought about by higher fuel expenses are resulting in many horticultural industries having a lower level of income in real terms.

Mr. Cope said the Council had joined the newly formed National Farmers Federation as an Associate Member but it would be hoped that a way could be found at the earliest opportunity to find the necessary finance to enable horticulture to take up full voting membership with the Federation.

He said other matters which were receiving attention by the Council were the increased level of imports of fruits and vegetables from New Zealand, the urgent need for a Government-assisted disaster crop insurance scheme to protect producers against loss of income from hail storms and other vagaries of the weather, and the need for improved communication between the various horticultural industries.

AHGC ANNUAL MEETING

At the Annual Meeting of the Council held in Sydney during November the Constitution was amended to provide for Associate Membership. The fee for this type of membership was set at \$100 for 1979/80.

It is hoped that this will enable the Australian Cherry Growers Federation and the Federal Grape Growers Council to continue their association with the Council.

The meeting also decided that AHGC should produce a bi-monthly Horticultural Newsletter to improve the communication between the Council and horticultural producers.

The Newsletter will be bulk mailed to AHGC member organisations for distribution to their growers.

The Council plans to meet with members of the Government Parties Horticultural Sub-Committee in the New Year to discuss matters of concern to the horticultural industry.

Murray Salinity Plan Unveiled

A \$122.87 million plan to tackle urgent River Murray salinity and drainage problems on a co-ordinated national basis has been unveiled.

The plan, resulting from a study by consulting engineers, Maunsell and Partners, includes provision of \$4.52m. for research into salinity and measures introduced to counter it during the first five years of the project.

The study was commissioned by the Commonwealth, S.A., N.S.W. and Victorian Governments in 1977.

It recommends the expenditure of \$75.24m. over five years and an additional \$47.63m. over a further 20 years.

The report of the consultants

study has been made available for public comment before the Governments make further decisions about the proposals.

The report suggests action in the first five years on:

- * Drainage works (\$41.42m.)
- * Saline groundwater interception and disposal works (\$18.33m.)
- * On-farm measures to improve irrigation practices (\$10.97m.)
- * Monitoring and investigation into the effectiveness of these measures (\$2.83m.)
- * Research into salinity (\$1.69m.)

The plan also recommends using existing controls to mitigate the effects of salinity.

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of the Australian Citrus Growers Federation

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International Society of Citriculture Congress in Japan - November 1981

The Fourth International Citrus Congress will be held at the Keidanren-Kaikan Hall, in Tokyo, Japan, during the second week of November, 1981.

The programme for the Congress will be as follows:

November 9 (Monday): 12 noon, Registration; 4 p.m., Opening session followed by reception.

November 10 - 12: Presentation of Papers.

November 13: Symposium on World Citrus Industry.

November 14: Field Tour to Shizuoka.

The Congress will cover the following sections:

Section I: Genetics, Breeding and Propagation.

Section II: Physiology and Ecology of Plants.

Section III: Cultural Practices.

Section IV: Diseases.

Section V: Insect Pests and Mites.

Section VI: Post-harvest Problems.

Section VII: Processing and By-products.

The President of the Congress will be Dr. Shoichi Tanaka from the Faculty of Agriculture at the Tamagawa University in Tokyo. Vice-president of the Congress will be Mr. Tomonaga Chino, Councillor of the Fruit Growers Co-operative Association of Japan and the former Director of the National Fruit Tree Research Station. The Programme Chairman is Professor Tokusuke Oohata, Faculty of Agriculture, Kagoshima University, Korimoto, Kagoshima, Japan.

Post Congress tours to western Japan are being planned following the one-day tour to Shizuoka.

Membership of the International Society of Citriculture can be obtained by

sending \$10 (U.S.) to Dr. H. D. Chapman, Secretary-Treasurer of I.S.C., Department of Soil and Environmental Sciences, University of California, Riverside, California 92521, U.S.A. The registration fee for the Congress is \$100 (U.S.).

ORGANISED ALL-INCLUSIVE TOUR

If there is sufficient interest on the part of Australian citrus growers and other interested persons ACGF proposes to arrange an all-inclusive 21-28 day tour which will include the period of the Congress and subsequent post Congress tours in Japan and also provide for a visit to Hong Kong, the Philippines and possibly China.

Anyone interested in participating in such a tour is requested to complete the form below and return to ACGF as soon as possible. Completion of the form will not involve any commitment to participate in the tour.

INTERNATIONAL CITRUS CONGRESS — JAPAN — NOV. 1981

The General Secretary,
ACGF,
Room 107, 10th Floor,
118 King William Street,
ADELAIDE, S.A. 5000

I am interested in attending the International Citrus Congress in Japan and in joining an all-inclusive tour covering Japan, Hong Kong, the Philippines and possibly China

Number of persons

(Please (Signed)

print) Address

EDITOR'S NOTE

(Continued from Front page)

Horticulture is not, generally speaking, sharing in the present so called "rural boom" and the situation will be aggravated during 1980 as further cost increases occur.

The Government must look seriously at increasing the level of the Nitrogenous Fertilizer Subsidy during 1980 to a level which will offset these dramatic cost increases brought about by the fuel pricing policy.

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FRESH CITRUS EXPORTS

NOVEMBER SUMMARY

AUSTRALIAN FRESH FRUIT EXPORTS BY STATES (Tonnes)

	QLD.	N.S.W.	VIC.*	S.A.	W.A.	TOTAL
Grapefruit	2.8	0.2	0.8	7.5	—	11.3
Lemons	15.7	3.3	0.4	0.1	42.7	62.2
Mandarins	—	1.4	—	0.4	—	1.8
Oranges	31.6	45.6	713.4	3402.1	2.5	4195.2
	50.1	50.5	714.6	3410.1	45.2	4270.5

* — Includes Vic./N.S.W. Border Areas

AUSTRALIAN FRESH FRUIT EXPORTS BY DESTINATION (Tonnes)

	Grapefruit	Lemons	Mandarins	Oranges	Total
P.N.G. and Pacific Islands	11.2	17.3	1.8	184.1	214.4
Antarctica	0.1	—	—	—	0.1
New Zealand	—	—	—	1918.5	1918.5
Singapore	—	41.4	—	800.2	841.6
Malaysia	—	0.4	—	400.9	401.3
Philippines	—	1.4	—	53.0	54.4
Hong Kong	—	—	—	785.2	785.2
Indonesia	—	1.7	—	40.7	42.4
Middle East and Persian Gulf	—	—	—	12.6	12.6
TOTAL	11.3	62.2	1.8	4195.2	4270.5

BUSY YEAR FOR HORTICULTURAL COUNCIL

At the Annual Meeting of the Australian Horticultural Growers Council held in Sydney last November the retiring President, Mr. Don Kidd, of Queensland, reported on a wide range of matters in which the Council has been actively involved during 1978/79 on behalf of horticultural producers.

Details of some of the more significant areas of activity are reported as follows:

HORTICULTURAL STATISTICS

The Council has been concerned at the trend by the ABS to decrease the level of collection of statistical data on the horticultural industry. This matter has been raised in correspondence both with the ABS and with the Lloyd Committee.

Latest information suggests that the ABS will collect statistics on three commodities (onions, potatoes and tomatoes) in all States and details on eight other commodities to be designated by the State Officers of the ABS that will reflect the important horticultural products of that State. The remainder will be bulked as 'other'.

We are advised that these changes have been made for budgetary reasons.

The Council believes this situation is far from satisfactory and will continue to press for a more useful collection of horticultural statistics.

NATIONAL FARMERS FEDERATION

The Council has kept in close touch with the various steps leading to the finalisation of the Australian Farmers Federation

and the formation of the new National Farmers Federation.

This took place at a Conference held in Canberra on Friday, July 20, 1979. The Council was represented by the vice-president, Mr. Hugh Cope.

The Council has made application for Associate membership of the new Federation. Unfortunately, at this time the Council is unable to take up the full membership offered to it.

PRICES JUSTIFICATION TRIBUNAL (PJT)

During the year under review the Council has made two separate submissions to the PJT on the subjects of Prices for Processed Foods and Prices for Certain Oil Products.

Whilst the Council put considerable effort into preparing these submissions it is disappointing that they received so little attention from the PJT.

The Council put forward what it considered a strong case on the subject of increases in the price of oil products. The horticultural industry is a major user of oil products and it was distressing that the PJT made no comment on the points raised in the Council's submission.

INTERNATIONAL HORTICULTURAL CONGRESS — TRUST FUND

Following the very successful International Horticultural Congress held in Sydney in August 1979, the NSW Department of Agriculture has set up a trust fund with the residue of income from the Congress.

It is intended that the fund will be used to assist a young person involved in the horticultural industry to attend international congress in the future.

The A.H.G.C. was asked by the NSW Department of Agriculture to nominate two people to act as trustees. The Council nominated Mr. Don Kidd and Mr. Alan

Newport and these nominations were accepted by the Department.

PLANT VARIETY RIGHTS

The Council has given support to the efforts being made by the Australian Nurseryman's Association (ANA) to secure plant variety rights.

This matter has received considerable attention from ANA and eventually the remaining opposition from the WA Government has been overcome.

Legislation is now before Parliament and it is hoped that Plant Variety Rights in Australia with reciprocal rights to other countries will become a reality in the near future.

VALUATION OF NURSERY STOCK

This subject has given the Council some concern due to the implications to all horticultural producers.

The ANA has again taken the lead in this matter as the query was first raised with nursery stock raised in pots. The matter has not yet been resolved and the ANA is seeking further discussions with Government.

ENERGY POLICY AND PRICES FOR OIL FUELS

In January the Executive Officer represented the Council at a meeting convened by Hon Kevin Newman, Minister for National Development. Farm leaders representing all sectors of rural industry were present and the rural industry viewpoint was put strongly.

Basically this policy is:

- Agriculture must be assured of a priority in supplies as oil-based fuels become more scarce
- As costs escalate the Government must consider a two-tier pricing system to contain farm costs and improved distribution system to ensure continuity of supply.

(Continued on page 9)

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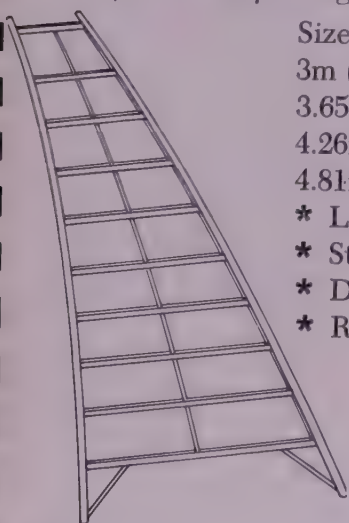
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River Murray Commission Storages, Diversions and Water Supply

DECEMBER SUMMARY

STORAGES	Capacity	Week ending 19-12-79
Hume Reservoir	Megalitres	Megalitres
Lake Victoria	3,038,000	2,740,000
Menindee Lakes	680,000	629,000
	1,794,000	1,736,000

WATER FLOWING TO SOUTH AUSTRALIA

Week ending 19-12-79	48,000
Monthly entitlement for December	217,000
Total December to 19-12-79	136,000
Total for November	1,158,000

WATER QUALITY

(Average quality for week — total dissolved solids in parts per million)

	20 - 12 - 78	19 - 12 - 79
Swan Hill	156	182
Euston	136	161
Red Cliffs	156	178
Merbein	186	220
Lock 9	191	168
Lake Victoria	262	264
Berri	202	252
Waikerie	266	402
Mannum	243	222
Murray Bridge	232	222

— (Extracts from River Murray Commission Reports).

BUSY YEAR FOR HORTICULTURAL COUNCIL

(Continued from page 8)

These issues are of extreme importance to the industry and the Council is developing a policy that will protect the long term interests of horticultural producers.

The Executive Officer also represented the Council at a National Energy Council Conservation Conference in Canberra at which the Government launched an energy conservation year.

The Council has an important role to represent the interests of horticultural growers with respect to future energy policy.

NAVEL ORANGE WORM

Early in 1979 the Council supported the Almond industry which was under threat due to the possible introduction of the Navel Orange Worm.

The Council was successful in having quarantine measures imposed so that all almonds entering Australia must be fumigated.

NSW FARM PRODUCT AGENTS ACT

The amendments to the NSW Farm Produce Agents Act, were submitted to the Council along with other rural organisations for comment.

The Council expressed concern to the NSW Department of Agriculture that the amendments did not provide sufficient protection for producers in the event of default by a produce agent.

The subject of Fidelity Funds and proper financial protection for all producers has not been resolved. There are many difficulties in achieving uniform and complementary legislation in each State. Revision of Farm Produce Agents Acts in each State may help to resolve this issue.

FORMATION OF UNITED FRESH

The Council materially assisted in the formation of United Fresh and fully supports its objectives. Whilst the activity of United Fresh will be distinct from that of the Council, the two organisations are fully compatible.

It can be expected that a sound working relationship between the two organisations will develop.

Members of the Council are strongly represented in the Production Division of United Fresh and Mr. Don Kidd was elected as the first President of the Production Division of United Fresh.

MEETINGS WITH THE GOVERNMENT RURAL COMMITTEE HORTICULTURAL SUB-COMMITTEE (LLOYD COMMITTEE)

The Council continues to receive strong support from Mr. Bruce Lloyd MHR and the members of his Parliamentary Horticultural Sub-Committee.

A meeting with the Committee was held in Canberra on March 29, 1979 and the Council was able to present a number of issues in detail.

Mr. John Cameron, Department of Primary Industry in Canberra, has also assisted as the liaison between the Government and the Department and the Council is most grateful for his advice and assistance.

Unfortunately, due to the pressing nature of the parliamentary work load the Executive was not able to spend as much time with the Lloyd Committee as it would have liked. In future an attempt will be made to organise meetings with the Committee when the House is not sitting.

EXECUTIVE COMMITTEE TO MEET IN CANBERRA

Members of the AHGC Executive Committee will meet in Canberra on Friday, January 31 to discuss matters to be placed before the Government Members Horticultural Sub-Committee early in the New Year.

Chairman of the Government Committee is Mr. Bruce Lloyd, MHR for the Victorian seat of Murray.

The Executive Committee is also planning to have discussions with the new Minister for Primary Industry, Mr. Peter Nixon, at an early opportunity.

The AHGC Executive Committee for 1979-80 comprises Hugh Cope (ACGF) President; Eric Lacey (Co-operative Almond Producers) Vice-President; Don Kidd (C.O.D.); John Miller (Mushroom Growers); and Gordon Wilson (Vegetable Growers). Mr. Brian Newman is Secretary of the Council.

RECIPE OF THE MONTH

GRILLED GRAPEFRUIT

Two grapefruit; brown sugar; glace cherries; sherry; cinnamon.

Halve the grapefruit, remove pips, and loosen the segments of fruit with a sharp knife. Sprinkle each half with 1 to 2 teaspoons sherry, brown sugar, and a little cinnamon. Place under medium grill for about 5 minutes. Place half a cherry in the centre of each. Serves four.

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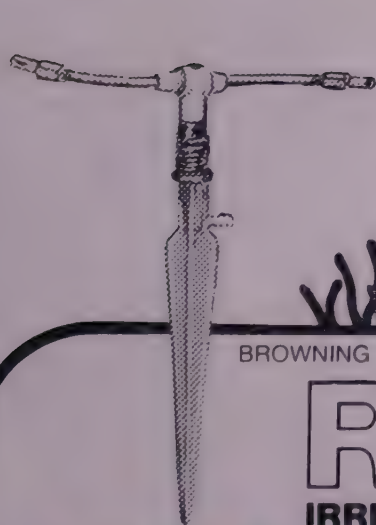
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INDUSTRY DOINGS

Mr. Rex Andrew, of Ramco, S.A., was awarded the Medal of the Order of Australia (OAM) in the 1980 Australia Day Honours List.

Mr. Andrew, who retired from active participation in citrus industry affairs last year due to health reasons, received the award for service to the fruit industry and, in particular, for his significant contribution to the citrus industry.

He was President of the Murray Citrus Growers Co-operative Association for a period of 22 years from 1957 up to the time of his retirement.

He was Vice President of ACGF in 1963-64; President from 1964-65 to 1967-68, and a member of the Federation's Executive Committee from 1963-64 until his retirement. Congratulations Rex—a just reward for outstanding service.

Mr. Curtis Scott has recently been discharged from hospital at Cobram, Victoria after several weeks following a serious accident on the property at Tocumwal.

Mr. Scott is a former Chairman of the Lemon Marketing Board of N.S.W. and is well known in citrus industry circles. Best wishes for an early return to good health are conveyed to Curtis.

The ACGF Lemon Sub-Committee will be meeting in Melbourne on Friday 14

March, 1980 to consider prospects for the 1980-81 lemon season and to prepare a submission for presentation to the FISCC on factory lemon prices.

An ACGF Research and Promotion Sub-Committee has been appointed by the ACGF Working Committee to collect and collate information on research projects which need to be carried out on matters pertaining to the citrus industry; to ascertain the likely cost of such projects; to draw up proposals for the funding by the industry of such projects; and to further develop plans for the creation of a National Citrus Promotion Authority.

The Sub-Committee comprises Messrs. Fred Walpole (Central Coast), Rob Miller (Sunraysia), Max Pettman (COC) and ACGF General Secretary, Hugh Cope.

The Sub-Committee will hold its first meeting in Adelaide on Tuesday 25 March.

ACGF Member organisations have agreed to contribute \$3,000 towards the cost of a research project to establish the cause of citrus dwarfing.

The project is being sponsored by the NSW Department of Agriculture and will be conducted by eminent virologist, Dr. Mark Schwinghamer, who obtained his Ph.D from the University of Adelaide and is currently doing post-doctoral work at the University of California.

The research is expected to show whether dwarfing is related to exocortis, and if it poses a threat through mechanical or insect transmission, to our Mother Tree Scheme or to existing plantings.

Total contributions to the cost of the project are estimated at \$43,000.

The \$3,000 being provided by ACGF has come from South Australia (COC/MCGCA) \$1,200; Citrus Management Co. Ltd. (Sunraysia/Mid-Murray) \$800; Central Coast Citrus Marketing Board \$200; Leeton Citrus Growers Association \$300; Mirrool Citrus Growers Association \$300; and COD (Queensland) \$200.

RECIPE OF THE MONTH AVOCADO SALAD

1 lemon, 2 oranges, 2 lettuce hearts, 1 grated carrot, 4 pineapple rings, 4 avocados (diced), salad dressing, ½ cup chopped walnuts, salt.

Cut the lettuce hearts in half, lengthwise, and place a pineapple ring on each half. Scoop out the avocado flesh and cut into small dice and sprinkle with lemon juice. Arrange the avocado dice on one side of the pineapple. Mix the grated carrot with salad dressing and chopped walnuts and place a little of this mixture on the pineapple in front of the avocado dice. Peel the orange and divide into sections. Arrange a few orange sections on the carrot mixture and serve with salad dressing.

Serves four.

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RIVERLAND'S BIG ORANGE

The Riverland's Big Orange at Berri, South Australia, is now completed and open for business.

This impressive new tourist attraction is believed to be the largest fibreglass sphere in the southern hemisphere.

The 16 metre structure is situated on the Sturt Highway, between Berri and Renmark, about 4 kilometres east of Berri.

Three Berri businessmen are behind the venture.

A spokesperson for the group, Mr. Bronte Coombe said that the Big Orange was the only "big" feature in Australia that was actually functional.

"The Big Orange will be the first complex in Australia to have a business conducted from it.

"The Big Pineapple, Big Cow and Big Banana in Queensland and NSW are all static displays."

Mr. Coombe said that the costs for the Big Orange structure, the landscaping of the surrounding area and the construction of an access road had been around \$140,000.

An extensive range of souvenirs and Riverland products will be available at the kiosk.

These will include Riverland Big Orange tea towels, tea spoons and T-shirts, fruit confectionery, freshly squeezed orange juice and Berri Fruit Juices.



Work nearing completion on the Big Orange.

Growers Cannot Recover Increased Fuel Costs

The rapid escalation in fuel prices following the Federal Government's decision to introduce world parity oil pricing is worrying fruit and vegetable producers, as one of their major costs of production rises without any accompanying increases in their market returns.

These fuel price increases are affecting not only on-farm costs such as operating tractors, but the transport costs in getting fruit and vegetables to markets and bringing supplies to the farm.

In the Federal Budget brought down in August 1978, the Federal Government announced its decision to introduce full import parity pricing, through applying a crude oil levy.

This levy meant locally produced crude oil, which currently supplies approximately 65 per cent of Australia's total fuel needs, was priced in line with the world price.

Prior to this, Australian consumers were

well insulated from the direct effects of the price-fixing arrangements of the OPEC countries because of our comparative self-sufficiency in oil.

The import parity price is currently based on the official selling price in the Persian Gulf for Arabian light crude.

What are the fuel requirements of fruit and vegetable growers?

The Department of Primary Industries has been investigating this question for Queensland's agricultural industries for some time now.

This study involves both pre-farm gate and post-farm gate components.

Though few specific figures are available, some are available on the fuel usage of tractors in producing some vegetables.

The farm tractor is the biggest single consumer of fuel on a fruit or vegetable farm, apart from vehicles.

A 60 hp tractor operating at 75 per cent

engine load, such as needed for land preparation, uses 14 litres of fuel per hour, and, at medium power, uses 10 litres per hour.

The DPI also estimates that for producing a vegetable such as beans, 18 hours of "tractor time" is needed for every hectare.

This figure jumps to 23 hours per hectare for beetroot.

Still, the quest for more fuel-economic systems for fruit and vegetable production is unlikely to reap major benefits as fruit and vegetable producers believe it is difficult to conserve any more fuel than they are doing at present without corresponding drops in production.

To avoid high labour costs, fruit and vegetable growers have turned to greater mechanisation where possible but this move is costing the grower more and more as fuel prices escalate.

While costs of production have risen, there is no way that the fruit and vegetable grower can pass these unavoidable cost increases to others in the marketing chain.

As any grower knows, the fruit and vegetable industry is extremely price sensitive.

Last year, the Australian Bureau of Statistics found that retail fresh fruit and vegetable prices dropped 13.9 per cent in the 12 months ending in October.

This compared with a 13.4 per cent increase in the overall price of food generally.

So while the incomes of fruit and vegetable growers fell during the year, increased fuel costs made the growers' operations even less profitable in a classic example of the cost-price squeeze.

(Continued on page 9)

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THE OUTLOOK FOR CITRUS

(Paper prepared by Gordon Duffus of the Commodity Economics (Crops and Forestry) Branch of the Bureau of Agricultural Economics and presented to the 1980 National Agricultural Outlook Conference in Canberra on January 30, 1980).

The outlook for the citrus industry in 1979-80 is for slightly higher levels of production and utilisation, and prices similar, in real terms, to those in the previous year. Australian exports of fresh citrus are expected to rise significantly during the year.

For processing fruit, FISCC minimum prices for the 1979-80 season have been set at \$76/t for navels and \$90/t for valencias, slightly higher than in 1978-79. The absolute levels of increases in processing prices for the 1979-80 orange crop are considerably lower than those determined for the 1978-79 season. It is anticipated that processors will pay a premium of at least \$4/t for navels and \$3/t for valencias delivered during 1979-80.

Processing prices paid for citrus fruit other than oranges are likely to be at or near FISCC minimum levels. For lemons and grapefruit, FISCC prices have been left unchanged at \$99/t and \$78/t, respectively, for 1979-80.

Prices for fresh citrus, in real terms, should be about the same as in 1978-79.

Citrus production in 1979-80 is forecast to rise to 475 kt, approximately 4 per cent higher than in 1978-79. Almost all of this increase will be orange production which is forecast to reach 380 kt. Lemon and mandarin production should remain at much the same level as in 1978-79, while a small increase is expected in grapefruit production.

Fresh citrus exports are expected to be significantly higher in 1979-80 than in previous years. Total export sales are forecast to rise some 35 per cent to a high of 35 kt. Lower export availability from major competing suppliers has provided an opportunity for Australian exporters to fill the resulting shortfalls in export supplies, particularly to Asian and Pacific markets.

The gross value of citrus production in Australia is forecast to rise by almost 10 per cent to nearly \$90m during 1979-80, mainly as a result of higher average returns from the export and domestic processing sectors and an increase in total production.

Four Per Cent Increase

Total production of citrus fruit in 1979-80 is estimated to be about 475 kt, approximately 4 per cent higher than in 1978-79. Almost all of the forecast increase is in the production of oranges, which is estimated at 380 kt, or about 80 per cent of the total. Production of valencias should increase by some 8 per cent to 245 kt, while navel production is estimated at 130 kt, much the same as last year. Lemon and mandarin production should also remain at 1978-79 levels (40 kt and 28 kt respectively), while grapefruit production is expected to rise marginally to about 26 kt.

The pattern of distribution of citrus fruit between the processing, domestic fresh and export markets is expected to change from that of the previous year, with processing intake rising marginally to around 240 kt and exports rising by 35 per cent to nearly 35 kt. The quantity of fruit going to the domestic fresh market is expected to remain near the previous year's level of around 200 kt.

In the processing sector, the intake of oranges is estimated to be around 205 kt in 1979-80, about 85 per cent of total processing intake of citrus fruit. This is slightly more than in 1978-79 and is the net effect of a projected increase (of 10 kt, to 155 kt) in valencia intake being partially offset by a lower intake of navels. Quantities of other citrus sent for processing are not expected to change significantly from 1978-79 levels.

Minimum FISCC factory prices for most categories of processing citrus have been increased for the 1979-80 season, but the increases are less than those determined for the previous season. For oranges, on average, FISCC prices rose by about \$10/t between 1977-78 and 1978-79, but the corresponding rise this year is only around \$3/t. FISCC prices for processing lemons and grapefruit have remained unchanged. The new FISCC prices are navels, \$76/t; valencias and seviles, \$90/t; lemons, \$99/t; and grapefruit, \$78/t.

(Continued on page 6)

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THE OUTLOOK FOR CITRUS

(Continued from page 5)

Market interaction of supply and demand is expected to result in average prices above FISCC minimum levels for most classes of citrus sent to processing in 1979-80. Margins of from \$3/t to \$4/t above FISCC minimums are expected for valencias and navels. These are similar to the margins paid in 1978-79. Prices paid for other citrus fruit are also likely to be slightly higher than FISCC minimum levels. One factor contributing to growth in processing demand during 1979-80 will be the new tariff arrangements for imported citrus juice. At levels of world prices expected to prevail in 1979-80, these arrangements provide for a higher level of protection for domestic producers than the 65 per cent ad valorem duty which was superseded.

With larger quantities expected to be processed and higher prices for processing fruit, growers' returns from processing in 1979-80 should be somewhat higher than those in the past year.

The quantity of fruit directed to the domestic fresh market during 1979-80 should approximate last year's level of about 200 kt. The expected increase in overall supplies will be directed mainly to processing and export markets in response to higher average returns in those markets compared with the returns in the previous year. Domestic fresh market prices are expected not to rise significantly over those of the previous year. A larger proportion of better quality fruit diverted to export markets and strong competition

from relatively large fresh apple supplies are expected to contribute to this outcome. Orange prices are expected to rise marginally to average around \$4.70 per 30 litre pack in 1979-80 (\$4.37 in 1978-79). Following a significant drop in 1978-79, lemon prices are expected to rise marginally to average around \$5.20 per 30 litre pack, as lemon supplies approximate those of last year. Fresh grapefruit prices are expected to rise, reaching an average of about \$5.50 per 30 litre pack in 1979-80.

Big Export Rise

Fresh citrus exports are forecast to be approximately 35 kt in 1979-80, almost 35 per cent higher than exports in 1978-79. Citrus production and exports from the West Coast of the USA have declined sharply following the Californian "freeze" and Australian exporters are expected to fill this shortfall in fresh export supplies, particularly to selected Asian and Pacific markets.

In the USA, production declined by about 10 per cent during the 1978-79 season following the "freeze" in California in December 1978. More recently, bad weather adversely affected production in Florida. The quality of fruit harvested has also tended to be lower than in previous years. In the 1979-80 U.S. season, U.S. production and export availabilities can be expected to recover and Australia will face a resumption of strong U.S. competition in Asian and Pacific markets later during 1980. Depending on the extent of the recovery in U.S. supplies, this should be reflected in a decline in both volume and unit prices of Australian fresh citrus exports from their current high levels.

Citrus production in the principal Southern Hemisphere producing and exporting countries in 1979-80 is forecast at around 10 mt, almost 10 per cent less than last year's record crop. This decline is due principally to an expected decline in the Brazilian crop caused by very dry weather during the blossoming period in August and September 1979. This set-back is, however, likely to prove only temporary as larger-than-average crops are predicted for next season. Citrus production in South Africa is expected to remain near last year's level, while the Cuban crop is forecast to rise substantially.

In the longer term, the overall growth in Australian citrus consumption which occurred during the 1970s is expected to continue into the 1980s, although at a reduced rate. This growth will be based mainly on continuing expansion of demand for citrus juices (particularly orange juice). However, the rates of increase in orange juice consumption of the order of 20 per cent a year witnessed in the early 1970s are not likely to be repeated.

While demand for citrus juices and processed citrus products in general has increased dramatically over the past decade, consumption of fresh citrus fruit fell significantly in the latter part of the 1970s. This trend could well continue into the 1980s unless significant changes occur in consumption habits which affect the position of citrus juice as a convenience and health food and in the relative prices of fresh citrus and other fresh fruit. On the supply side, FAO commodity projections to 1985 forecast slow growth in total Australian citrus production. Production is projected to grow at an annual rate of

around 2 per cent, reaching 520 kt by 1985. The FAO also expects that world demand for processed citrus will expand by about 25 per cent between 1975 and 1985.

In late March 1979, the Commonwealth Government announced new arrangements for assistance to domestic producers of orange juice, to apply from 13 April 1979. This new arrangement replaces the previous 65 per cent ad valorem tariff which applied to orange, mandarin and tangerine juice imports prior to 13 April. Under the new measures, a variable unit tariff applies to imports of orange and tangerine (mandarin) juice according to total soluble solids (TSS) content. The unit tariff is set at a level which ensures that the value of the TSS content in imported juice in Australia does not fall below a bench-mark level of \$2.40/kg. This new procedure ensures that, if world prices for single strength juice fall below 15c/l (\$1.45/kg TSS), the 'equivalent' ad valorem duty will exceed 65 per cent.

With world prices expected to fall within the range \$1.30/kg to \$1.65/kg TSS in the immediate future, it is likely that a higher level of protection will be afforded the industry during 1979-80 than it would have received under the old arrangements. This should contribute to higher prices for processing fruit and higher retail prices for citrus juice. In the longer term, the arrangements will protect processors from import competition during periods of low world prices and will provide a \$2.40/kg TSS 'floor' to the market. However, this floor is not subject to indexation and will be eroded through time by inflation. It will also be ineffective if domestic production of orange juice expands beyond the immediate requirements of the domestic market.

The overall profitability of the industry in the medium term may be expected to continue to be importantly influenced by future Government decisions regarding assistance to the industry, the production response expected through the protective measures afforded the industry and the degree of import replacement as a consequence.

CITRUS INDUSTRY SUMMARY SHEET 1978-79 1979-80 (est.)

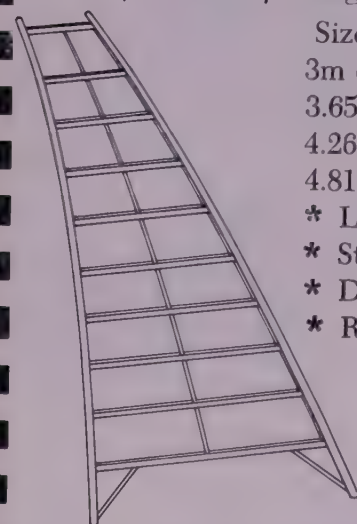
Gross Value, \$m	80	90
Production, Kt	455	475
Bearing Tree Nos. '000	5 575	5 570
Disposal		
Fresh Consumption, Kt	200	200
, \$m	52	57
Processing, Kt	230	240
, \$m	20	21
Exports, Kt	26	35
, \$m	8	12

Note: figures have been rounded in order to emphasise magnitudes.

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Industry Well Organised to Overcome Problems in 80's

By FRED WALPOLE, Secretary-manager Central Coast (NSW) Citrus Marketing Board

(Paper presented to the 1980 National Agricultural Outlook Conference in Canberra, January 30, 1980)

As the Australian Citrus Industry goes into the nineteen eighties any **short term** outlook prediction for the Industry based on results of the 1978-79 and 1979-80 seasons would be that its economy was and would be reasonably satisfactory.

The major problems which faced the industry in the nineteen seventies, a decade which caused the greatest upheaval in its history, had been met and in the main, temporarily overcome and the decade ended on a reasonably bright note.

However this paper is not designed to look at a short term outlook, but rather is an attempt to be a "crystal ball" outlook over the next 10 years and in this context I suggest that many of the major problems of the seventies, although temporarily solved, are still with us. Our approach to them in the next 10 years will determine whether the economic future of our Industry will continue to become brighter or not.

Situation

The past decade of the seventies produced the greatest period of upheaval and change that the Australian Citrus Growing Industry has ever seen as crisis followed crisis rapidly and even overlapped. In that decade the Industry:

- * Started with serious overproduction of oranges (80 per cent of the total citrus production) which within 4 years had become underproduction.

* Contained its Costs of Production inflation to approximately 97 per cent against an indexed inflation of approximately 150 per cent.

* Saw its marketing structure change from a virtual reliance on the fresh fruit market to an even split up between the Processing and Fresh Fruit marketing outlet.

* Saw the emergence of a powerful new sector — the Chilled Juice (or Converting) Industry—a force which at its beginning had very few ties with the remainder of the Industry and which in the mid seventies, with its import of cheap overseas orange juice, threatened the whole future of our Industry. Our Industry, with the co-operation of the Processing Industry, wise Government decisions and the fortunate (to us) production disasters of 1977 and 1978 in the USA, succeeded in finding a solution to this major threat.

* Finished with two seasons in which all production was marketed at prices which, although not as high as citrus growers would like, gave reasonable viability to the Industry.

In looking at the decade ahead of us it must be said that the Australian Citrus Growing Industry is in a far better position to face any major problems it may encounter than it was in 1970. Despite the problems posed to it in the

seventies, or rather because of the ways they were overcome, the Industry today:

- * Is reasonably viable
- * Is very efficient by world standards with much higher managerial skills and a more business-like approach than was the case in 1970.
- * Has a reasonably satisfactory balance of non bearing to bearing trees although there are slight problems of economic oversupply in regards to Navel oranges, Lemons and Grapefruit to current marketing outlets.
- * Has reasonable prospects of developing increased export markets to the developing nations to our north.
- * Has adequate processing facilities well distributed through the major citrus growing regions.
- * Currently enjoys a reasonable degree of protection against the threat of an uncontained flood of cheap imported citrus juice.
- * Has the basic structure in its Marketing Boards and organisations to improve the still weak and relatively disorganised fresh fruit marketing sector.
- * And finally, above all it has the experience, know-how and administrative organisation developed in the seventies with which to face the problems of the eighties.

(Continued on page 8)

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Industry Well Organised to Overcome Problems in 80's

(Continued from page 7)

Outlook

In looking ahead 10 years, the only certain forecast which can be made is that the continuing viable development of the Australian Citrus Industry in that decade will depend on the ability of the Industry to meet or foresee and overcome the problems it will certainly face whether they be old or new. I am confident that the Industry's managerial skills, adaptability and organisational competence, so finely honed in the past decade will prove to be adequate to the task ahead. I suggest that there are four areas which are vital to the viable future of our Industry and for which planning and application should commence now and be progressive. They are—

1. Continuance of Government protection against imports.
2. Increasing production yield.
3. Marketing.
4. Processing and Juice Marketing.

1. GOVERNMENT

The industry must never relax its efforts to keep the Government, its Commissions and its Economists aware of the fact that the Australian Citrus Juice Industry cannot now and almost certainly will not in the future, be able to compete with e.g. Brazil and still remain viable.

In certain circles there are too many stories about how the raging Brazilian inflation must bring their prices up. The cold fact of the situation as explained to me by a leading Brazilian Citrus Scientist last year, is that the Brazilian Citrus Industry (the second largest in the

world) must maintain its competitive structure on world markets if it is to survive and the Brazilian Government will ensure it does survive.

How can we even compete with an orchard economy where an orchard hand receives less than 9 per cent of the Australian Award and where an orchard Manager is paid approximately the same per month as the Australian orchard hand receives per week?

The other need in this campaign to the Government must be to seek upward indexation of the tariff structure to compensate for continuing inflation, without

which the viability of the Industry would be rapidly eroded.

The industry, through our Government's support and the Florida and Californian disasters, has been given a valuable breathing space in which to consolidate after the battles of the seventies. It must not become complacent about the situation, because with the recovery of the USA Citrus Industry and the continuing growth of the Brazilian Citrus Industry the pressure to expand world markets for citrus juice is about to commence again in earnest.

(Continued on page 10)

FRESH CITRUS EXPORTS

DECEMBER SUMMARY

AUSTRALIAN FRESH FRUIT EXPORTS BY STATES (Tonnes)

	QLD.	N.S.W.	VIC.*	S.A.	W.A.	TOTAL
Grapefruit	0.2	0.6	0.9	5.0	—	6.7
Lemons	2.7	3.2	1.3	1.6	3.5	12.3
Oranges	11.1	7.7	235.2	1367.7	—	1621.7
	14.0	11.5	237.4	1374.3	3.5	1640.7

* — Vic. includes N.S.W. Border Areas.

AUSTRALIAN FRESH FRUIT EXPORTS BY DESTINATION (Tonnes)

	Grapefruit	Lemons	Oranges	TOTAL
PNG & Pacific Islands	6.7	7.2	66.4	80.3
New Zealand	—	—	782.6	782.6
Singapore	—	2.4	289.3	291.7
Malaysia	—	—	188.6	188.6
Philippines	—	1.1	1.7	2.8
Hong Kong	—	—	13.3	13.3
Indonesia	—	1.6	2.7	4.3
M. East & Persian Gulf	—	—	277.1	277.1
	6.7	12.3	1621.7	1640.7

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JANUARY SUMMARY

STORAGES	Capacity Megalitres	Week ending 30-1-80 Megalitres
Hume Reservoir	3,038,000	2,102,000
Lake Victoria	680,000	362,000
Menindee Lakes	1,794,000	1,630,000

WATER FLOWING TO SOUTH AUSTRALIA

Week ending 30-1-80	49,000
Monthly entitlement for January	165,000
Total for January to 30-1-80	210,000
Total for December	221,000

WATER QUALITY

(Average quality for week — total dissolved solids in parts per million)

	31 - 1 - 79	30 - 1 - 80
Swan Hill	156	118
Euston	132	173
Red Cliffs	192	259
Merbein	282	343
Lock 9	222	270
Lake Victoria	259	270
Berri	268	318
Waikerie	316	444
Mannum	279	444
Murray Bridge	273	360

— (Extracts from River Murray Commission Reports).

GROWERS CANNOT RECOVER INCREASED FUEL COSTS

(Continued from page 4)

Fruit and vegetable growers fighting against severe competition from imports face an even tougher battle for survival.

Worst affected by cheap imports into Australia are producers of strawberries, passionfruit, peas and carrots.

Local growers cannot afford extra cost pressures for vital inputs like fuel, especially when their overseas competitors often benefit from favorable export incentives and special trade allowances.

In addition, all fruit and vegetable growers must be confident that in the event of a shortfall in fuel supplies in the future, essential industries such as the fruit and vegetable industry will not be disadvantaged.

The dislocation that can occur when fuel is in short supply was evident in Queensland last year, when supplies of distillate fell far short of requirements.

Like other primary producers, fruit and vegetable growers must be guaranteed regular and adequate fuel supplies, even when other sections of the community must curb their consumption of fuel during supply shortages.

With a Federal election due at the end of this year, certain members of the Government are concerned about the effects of its fuel pricing policy on marginal electorates.

COD, through its affiliations with other primary producer organisations, such as the Council of Agriculture, the Australian Horticultural Growers' Council and the Australian Farmers' Federation, has already expressed the concern of fruit and vegetable growers about the effects of high fuel costs on their industry.

Fruit and vegetable growers are now hoping the Government will act sensibly and responsibly in guaranteeing primary producers a fair go on fuel.

— Queensland Fruit and
Vegetable News.

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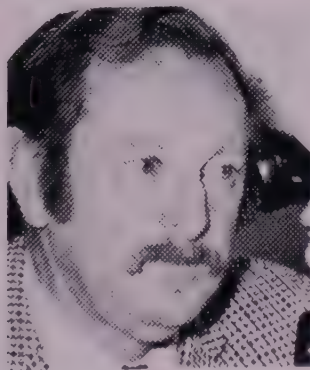
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Industry Well Organised to Overcome Problems in 80's

(Continued from page 8)

2. INCREASING YIELDS

The Citrus Growers' battle to contain the soaring inflation rate of the seventies without the ability to index his returning prices upwards in accord with inflation, must be classed as a major victory. The indexed inflation rate for the period 1970-80 was approximately 150 per cent against an orchard inflation rate judged on Cash Costs of Production (i.e. all production costs to orchard gate excluding payment to Owner Manager(s) or any allowance for depreciation and taxation) of approximately 97 per cent (Source: ACGF Annual Cost of Production surveys).

This victory was achieved by the grower increasing his managerial skills, improving mechanisation, eliminating as much hired labour as possible, and in general becoming a businessman and his orchard a business rather than a way of life.

However the means used to achieve this victory also sowed the seeds for the problems ahead, whilst ever we have to face inflation of any order above say 5 per cent per annum, simply because he has used up most, if not all the readily available and relatively quick to take effect options available to him, and as a result a new approach must be sought.

One very interesting factor in the ACGF Annual Surveys became apparent a couple of years ago which I believe points the way to an important long term solution to this problem. This was the relationship between Costs of Production and increased production yield per unit of planted orchard. The following table illustrates this clearly.

	1969-71	1976-78
Production Yield per Planted Hectare	19 tonnes	24 tonnes
Cash Costs of Production per Planted Hectare	\$30	\$58

If the production yield in 1976-78 had been 19 tonnes the cash cost of production would have been approximately \$69 per tonne.

Increased production per unit of area cannot be achieved quickly so it is a long term concept and comes within the context of this paper.

To achieve significant increases I suggest that the Citrus Growing Industry will have to revolutionise its planting designs toward a concept of higher density plantings with probably a shorter economic block life than at present. Fortunately work commenced by the NSW Department of Agriculture 15 years ago and a definitive research study in the Central Coast of NSW over the past 2 years has pointed the way. The principles of this concept, its advantages, problems, costs and returns have been laid down, evaluated and confirmed by overseas research studies, and will be available to the Industry in the next few months.

It is an exciting concept and one which if adopted will I believe assure the continuing viable economic state of our Industry.

3. MARKETING

Marketing of citrus fruit has always been the weakest section of our Industry's economy. The average citrus grower who has worked and studied to control his costs to the orchard gate, has always tended at that point to forget his business principles and suddenly become a price taker and not a price maker. He and his organisations generally have been fearful of taking steps which could correct this situation generally, I believe, because they have been brain washed by those who purchase their commodity. Over the last six years the imported juice bogey has been used so effectively in this exercise that against an indexed inflation rate of about 100 per cent, an increasing population and a rapid increase in per capita consumption,

★ Processing prices set by the FISCC increased by only (Valencia oranges) 25 per cent.

★ Fresh fruit market gross prices increased by approx. 40 per cent and in this field rising marketing costs have tended to wipe out the value of these increases to a marked degree.

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— INSPECTION WELCOME —

(Continued on page 11)

Industry Well Organised to Overcome Problems in 80's

(Continued from page 10)

If the Citrus Growing Industry is to increase its viability markedly in the decade ahead, it must change its thinking and become far more businesslike in its approach to marketing.

I believe there are four main areas which need to be studied carefully —

- (i) Research into the fresh fruit requirements of our major markets plus greater co-operation between ALL producing areas to avoid the disastrous effects of market over-supply. Some steps have been taken in this regard but they don't go far enough.
- (ii) The Industry must learn to use its statutory muscle as provided by its Marketing Boards, more effectively and in greater collaboration, to obtain maximum returns.
- (iii) As under the protective tariff we have been granted there will be an upper limit to prices obtainable for processed fruit, the existing nexus between processing prices and returning prices for fresh fruit must be broken and forgotten. The costs, risks and requirements of each market are totally different and we must always remember that our isolation from the rest of the world will always ensure that our fresh fruit market remains. It is the market for 50 per cent of our production and steps will have to be taken to make certain that the Industry gets its fair share of the consumer costs.
- (iv) The development of maximum export markets (provided they prove viable) of in particular Navel oranges and lemons to our Eastern neighbours.

4. PROCESSING AND JUICE MARKETING

The outlook for these sectors of the Australian Citrus Industry looks sound, with the market for juices after a temporary levelling out, expanding once again.

The most pressing need at the moment is for research, and utilisation of previous research with, in particular, Lemon and Grapefruit juice to provide a more acceptable consumer product and thus lift consumption. Dr. Chandler and his team at the CSIRO, North Ryde achieved a world first breakthrough with debittering of Navel juice which has not been fully utilised by the Processing Industry. He is currently working on grapefruit juice with early results being very promising. If this could be followed by lemon juice product improvement, the current minor over-production trend in these varieties would be solved.

The BAE paper referred to the effect of rising Chilled Juice prices on both market sales and type of product. I have never been able to understand why this market has not followed the USA pattern of concentrate selling to the consumer. Currently a 2 litre single juice orange juice equivalent concentrate pack is selling for approx. \$1 against \$1.50 plus for the single strength reconstituted product. It should be noted that \$1 for 2 litres was approximately the price 6 years ago for single strength pure juice. It will require a campaign of consumer education to achieve this and I would hope that this will be undertaken in the near future.

February, 1980

Conclusion

I do not believe that the Nineteen Eighties will see any major increase in Australia's citrus production. Limitations of suitable land and water in our major irrigation areas will limit any major increase in planted areas whilst the high cost of investment will limit any opening up of new areas. The hope of future production expansion will depend on whether the industry revolutionises its planting technique and this, if adopted, is a relatively long term project. Reconstruction of the industry, which has seen the increasing disappearance of the small non viable units either by absorption or changeover to other horticultural production, will continue and I expect to see

the Citrus Growing Industry based on sound economic units by the mid eighties.

Certainly there will be problems and crises to face but the industry is well organised to meet and overcome them provided it retains that overall spirit of co-operation between all its sectors which I believe was one of the most important lessons learnt in the seventies.

We go into this new decade soundly, organised and relatively economically viable and provided we do not become complacent and forget the lessons learnt in the Seventies, my forecast is that the outlook for the Australian Citrus Industry in the Nineteen Eighties is bright and that 1990 will see it remaining as a sound economic unit of the overall Australian Rural Industry.

Fruit Growing Industry (Federal) Award Wage Rate Schedule

From the beginning of the first pay period to commence on or after 4 January 1980.

In accordance with the decision of the Australian Conciliation and Arbitration Commission in the National Wage Case, the rates of pay in this award are adjusted as follows:

MALES AND FEMALES No. Classification

	Old Rate Per Week	Increase Per Week	New Rate Per Week
1. Fork Lift Truck Driver	143.80	6.50	150.30
2. Motor Lorry Driver	143.80	6.50	150.30
3. Tractor Driver	140.80	6.30	147.10
4. Employee engaged in sorting, grading, and/or packing fruit	132.70	6.00	138.70
5. GENERAL HAND—Class 1 An employee who performs work of any of the following classifications: Sweat lumper, maintenance worker in charge of machinery, concrete worker and/or rack builder, trelliser, box maker by hand, boiler attendant, furnace attendant	140.80	6.30	147.10
6. GENERAL HAND—Class 2 (i) An employee who performs general duties as directed other than those elsewhere specified herein (ii) An employee who performs general duties as directed other than those elsewhere specified herein and who has been continuously employed by an employer for at least two years	137.60 140.80	6.20 6.30	143.80 147.10
7. LEADING HAND (i) In charge of 2 to 6 employees (ii) In charge of 7 to 10 employees (iii) In charge of 11 to 20 employees (iv) In charge of over 20 employees A leading hand shall mean an employee appointed to be in charge of and to supervise the work of other employees.	7.10 7.70 11.80 15.30	0.30 0.30 0.50 0.70	7.40 8.00 12.30 16.00

JUNIOR EMPLOYEES.

- (a) The minimum wage payable to junior employees shall be the undermentioned percentages of the weekly adult wage rate for the classification under which they are employed.

	Percentage of the Weekly Adult Wage Rate
1. In Orchards and Vineyards:	
At 15 years of age	50
At 16 years of age	60
At 17 years of age	70
At 18 years of age	80
At 19 years of age	90
At 20 years of age	100
2. In Packing Houses, Cool Stores and Dehydration Plants:	
At 15 years of age	50
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At 18 years of age	100

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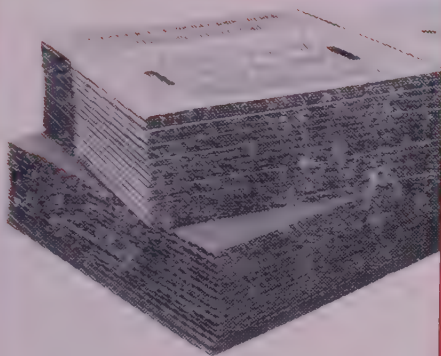
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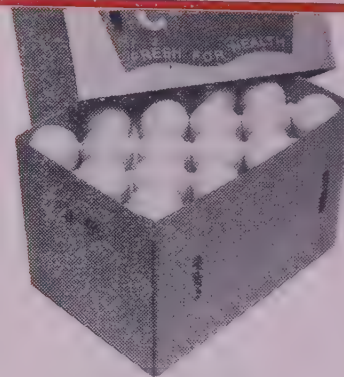
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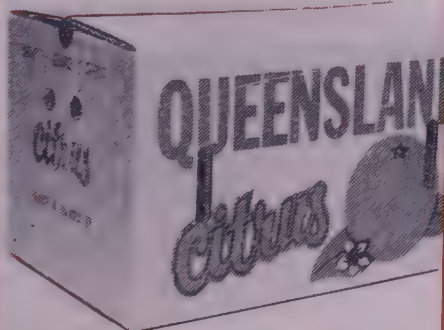
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EDITOR'S NOTE

The recent fuel crisis in NSW highlighted the effect that industrial disputes can have on the orderly marketing and distribution of fresh fruit and vegetables.

Horticulture welcomed the exemption eventually granted allowing fuel supplies to be purchased by people transporting perishable food products.

Such industrial action causes a backlog of produce in central markets — the

(Continued on page 3)

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INDUSTRY DOINGS

A Citrus Growers Council has been
formed in New South Wales.

The Council will provide increased
liaison between the ACGF member
organisations in NSW on matters relat-
ing to the citrus industry in that State
and will enable industry views to be
presented to the State Government and
to Government Departments and Auth-
orities.

Mr. Ken Thompson of Griffith, the
present Secretary of the Mirrool Citrus
Growers Association, has been elected
President of the Council.

Vice Presidents are Mr. Jack Keck of
Barham, NSW, and Mr. Alan Unitt of
Kulnara via Gosford, Mr. Fred Walpole
was elected Secretary.

* * * *

The Fruit Industry Sugar Concession
Committee will meet in Sydney on Tues-
day 22 April, 1980 to determine minimum
prices to apply for factory purchases of
Lemons in the 1980/81 season.

An ACGF Deputation comprising Messrs
Ted Burgess and Jack Corner (Lemon
Board), a South Australian representa-
tive and the ACGF General Secretary
will wait on the FISCC to present a
sub-
mission to the meeting in respect to
the 1980/81 season prices.

It is expected that the FISCC meeting
to consider minimum prices for the other
citrus fruits of the 1980/81 season will
be held at Griffith, NSW during the week
commencing 23 June, 1980.

* * * *

The Annual Meeting of the Central
Coast Citrus Growers Organisation held
at Somersby (Gosford) on 18 February
1980 elected Mr. Alan Unitt of Kulnura
as President of the Organisation for 1980.

Mr. Unitt's election followed on the
retirement of Mr. Lou Peruch who did
not seek re-election after serving as
President since 1976.

Mr. Unitt is well known in the Central
Coast citrus industry and is a son-in-law
of Mr. Ray Gibson.

* * * *

Advice has been received that the 21st
International Horticultural Congress will
be held at Hamburg, Federal Republic of
Germany from 29 August to 4 September,
1982.

This important event in the World
Horticultural Calendar is held every four
years and the Hamburg Congress will

follow a similar pattern to the 20th Con-
gress held in Sydney in 1978.

Persons interested in details about the
Congress should write to the Congress
Secretariat, 21st International Horticultu-
ral Congress, HAMBURG MESSE UND
CONGRESS GMBH, Congress-Organisa-
tion, Postfach 30 23 60, D2000 HAMBURG
36, Federal Republic of Germany.

* * * *

The 1980 Annual ACGF Conference will
be held at the Wayamba Holiday and
Convention Centre, Wirraway Street,
Alexandra Headlands, Sunshine Coast,
Queensland, on Monday, Tuesday and
Wednesday 12, 13 and 14 May, 1980.

The Conference will be officially opened
by the Hon. V. B. Sullivan, the Queens-
land Minister for Primary Industries.

Highlights will include an address by
Mr. Fred Walpole, Manager/Secretary of
the Central Coast Citrus Marketing
Board on the potential for high density
citrus plantings.

The program will include visits to local
tourist attractions for the ladies and a
day tour on Wednesday 14 May which
will include a visit to a research station,
a citrus processing plant and a citrus
orchard.

Registration forms are available from
the ACGF office in Adelaide.

EDITOR'S NOTE

(Continued from front page)

produce spoils quickly — growers suffer
heavy losses — and consumers go with-
out essential food items.

ACGF fully supports the call by AUF
President, Tony English for the classifica-
tion of fresh fruit and vegetables as
essential food supplies with exemption
from industrial action.

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THE FUTURE - 'THROUGH A GROWER'S EYES'

By IAN S. TOLLEY, Renmark, South Australia

(This paper has been written by Mr. Tolley following the 1978 meeting of the International Society of Citriculture held in Sydney to emphasise some of the specific areas to which Australia should devote more attention.)

Improving Propagation Material

It is becoming obvious that we should increase our efforts to evaluate new rootstocks to supplement our knowledge and to increase the existing range of rootstocks. I believe that the existing stocks we use require comment.

Rough Lemon. In Australia, for too long this has been considered a useful rootstock. I believe its elimination, with few exceptions, is now overdue, since we have few virgin soil areas left due to our limited water resources.

Sweet Orange. This stock will become less and less important, although we have many fine orchards on this stock which continue to this day to produce some of Australia's finest quality fruit. Its sensitivity to phytophthora is well demonstrated. Perhaps we might look for more resistant selections.

Cleopatra and Emperor Mandarin. These are of more interest and have demonstrated already good resistance to salinity and high lime; and they have exhibited mild resistance to phytophthora and nematodes in many areas. They are, however, sensitive to climatic conditions and are more suitable to our hot arid areas.

Poncirus trifoliata. This has been the salvation of the NSW citrus industry, and has been used widely on heavier soils of neutral to acid pH, and in the higher rainfall areas. With some exceptions again, its use in other citrus areas of Australia has been limited by its susceptibility to high lime, boron and salinity. It certainly offers a fertile field for future breeding work.

Citrange. We were fortunate to introduce **Troyer and Carrizo citrange** selections at a time when our replant problems were beginning to assume major proportions. Their undoubted success in the past 15-20 years has lulled us into a false sense of security, since success in replanting areas where these citrange stocks have been used before, is uncertain.

Sour orange. Extensive use of sour orange has occurred world-wide and, in the early years, Australia used it also. The Australian black citrus aphid has been a most efficient vector for tristeza and rendered this stock useless for the orange industry by the late 1960s.

Much of the variability of the results of rootstock work I believe has been the result of very variable seedling selections used indiscriminately by researchers and nurserymen alike. We all have a part to play in providing more reliable seed source trees for the future.

The use of **symbiotic mycorrhiza** in the production of containerized trees for commercial growers must become part of our production techniques.

Tree Size

Australia has to date been poorly served with tree-shaping equipment commonly available in the United States and Israel. Part of the reason for an interest in this area here was stimulated by the need to improve access to overcrowded orchards.

Hedging. Reshaping tree rows by hedging can significantly improve photosynthesis, foliar nutrient uptake, and redistribute fruit on planes more suitable for improved harvesting techniques. Adoption of hedging to improve access is of incidental benefit only.

Topping. Topping overgrown and tall trees has improved light distribution to adjacent rows, improved wind flow across the orchard top, and as a consequence reduced the percentage of marked fruit available for earlier markets. The fact that this facilitates better harvesting techniques is of secondary importance.

Skirting. By far the least accepted or understood concept is our need to raise tree skirts off the orchard floor.

Major benefits arising from skirting include:

- improved irrigation practices
- improved air flow and dryout phytophthora sensitive areas
- improved weed control
- improved total fruit quality
- improved pest control - particularly snail attacks
- improved harvesting procedures
- improved general orchard access (again of lesser importance).

Many growers dismiss the above concepts of hedging, topping and skirting by saying they would lower yields. This would certainly be the case if the programme was started too early and the trees were too small, but the comments are invalid once the trees produce commercial fruit quantities. Of overall importance in topping, hedging and skirting is the correct timing and sustained use of these techniques for the reasons mentioned above, and elaborated on by other speakers.

The use of timed hedging techniques can dramatically change the biennial cropping tendency of an orchard — an aid itself to more regular marketing. It undoubtedly will facilitate future use of more mechanical harvesting aids, as harvesting is a major cost factor in any citrus enterprise.

A Future Direction

An area which I believe worthy of a great deal of study is the use of interstocks to control the size of trees. Some work has been done overseas and results look promising. One of the most important aspects is that once a combination is found to be successful it can be replicated and guaranteed to perform reliably.

The use of mild-strain exocortis to dwarf trees is at present unproven, and this is why a few trees only are released to growers for limited evaluation. Areas where *P. trifoliata* is not a suitable rootstock would not in any case be able to benefit from this study.

The review by Professor Reuther on the significant effects on rootstock/scion combinations of climatic changes leads me to emphasise the need to plan many more trials on the widest possible climatic and soil basis, since some of the work in this area is of limited use when transferred to areas where the climate is markedly different.

Traditionally we have thought of planting orchard sites for a lifetime and con-

sider a span of 40-60 years as being reasonable. I believe it may be unrealistic today. Perhaps we should be looking at 20 years as an optimum figure for the future.

Such considerations as tree density, the marketability of a particular variety, influence of irrigation, drainage considerations, and effects of pests and diseases offer reflections on the shape of orchards for the future. It may not be unrealistic to consider work on the annual harvesting of apples as a field crop to be relative to our future in the citrus industry.

Pest and Disease Control

Biological control has developed with the installation of the first commercial production insectory in Australia. Many orchards now enjoy freedom from red scale as the result of using the mass release techniques developed overseas. However, there will always be areas in conflict with the sustained use of biological control. Whilst we consider red scale to be our No. 1 orchard pest in Australia, we do not need to use chemical control in many areas to maintain the production of commercial quantities of marketable fruit.

There has been much said on the ecological hazards of chemical use in agriculture and horticulture. I believe much of the criticism has been valid. Nevertheless we should guard against the cranks who believe we can sustain the world population only by organically grown food. The balance between our needs for chemical and biological control of our pests and diseases must continue to occupy a significant section of our endeavours towards economical production of the crop.

Aerial photography. I am convinced that aerial photography will become a vital part of pest and disease control in the future and that hopefully, as a spin-off from our computer age, techniques might be developed on a volume basis to improve crop production estimates which are so obviously deficient in this present day.

Viruses. The last meeting of the International Organisation of Citrus Virologists was held in Australia in May 1979. This meeting highlighted the awareness we have of the importance that viruses play in the deliberation of our citrus trees. It is a dubious honour that we rank foremost in our understanding of tristeza and of the adverse effect it has in inhibiting the production of healthy citrus trees.

The work of Dr. Lilian Fraser in pioneering the commercial use of mild-strain inoculations for grapefruit has indicated that we may well be able to adopt similar techniques in the future to protect a much wider range of stock/scion combinations.

It is imperative that we develop much more rapid indexing procedures to enable more continuous monitoring of the most valuable stock and scion source trees that survive bud selection assessment procedures.

(Continued on page 5)

THE FUTURE — 'THROUGH A GROWER'S EYES'

(Continued from page 4)

This meeting has shown that we will be able to use **shoot/tip grafting** and **tissue culture** techniques to maintain clean propagation material, enabling us to clean-up good propagation material which has become infected.

The possibilities of short-circuiting the development of nucellar seedlings with their inherent problems of thorniness must be encouraged. I believe the observations reported on by Dr. Grobler of the Messina nucellar plantings in South Africa are of great interest to the citrus world since these plantings represent a new source of material. The lack of early thorniness is of special note as being distinctly at odds with most research in this area elsewhere in the world.

Soil Management

The review of the current herbicide knowledge and application by Dr. Jordan was a classic report and should be used as a basis to speed the adoption of what are now well known and beneficial techniques. My observations lead me to think that the adoption of these techniques in Australia has been hindered by some damaging applications, arising from the lack of understanding that precision application techniques are essential at all times.

Irrigation

I believe we have observed at this Congress a dramatic change in concept that we will need to develop a flexibility of mind sufficient to cope with the major changes occurring right now. We have come to realise that we face severe competition for our limited water supplies in view of the expanding populations in all parts of the world. As the quality of our irrigation water has become increasingly saline, the development of drippers, dribblers, spitters, oozers, micro-jets and mini-sprinklers have done much to conserve our limited water resources. They will continue to be refined at an ever-increasing rate. This should not discourage growers from proceeding with conversions from overheads with all haste.

Water pressure operated fertilizer injectors. The development of these injectors in parallel with new irrigators enables a grower to cut costs, but more importantly allows him to place fertilizers directly to the roots so that they receive the majority of the nutrients available with minimum loss through leaching.

The controlled use of a leaching factor in irrigation management may well be a turning point in an area considered by many to be the most important sustained job we do in an orchard. We have to thank Israel's irrigation experts for the pioneering work they are doing, and to emphasise that all arid countries will continue to need more work in understanding the concept of sustained irrigation with saline water.

I believe we must also consider the adoption of more universal standard terms of reference for the future. The use of a crop production figure of 'Tonnes per cubic metre of water' may receive consideration.

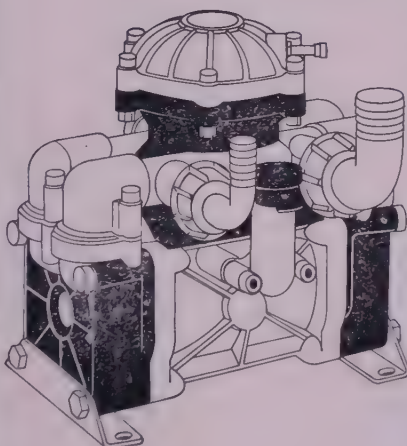
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RECORD CITRUS EXPORTS FOR 1979

Exports of fresh citrus fruits from Australia during 1979 reached the record level of 45,000 tonnes according to information provided by the Department of Primary Industry.

The 1979 figures represented an increase of 68 per cent over the volume exported in 1978 and accounted for 10 per cent of the estimated citrus production.

Exports of oranges totalled 31,500 tonnes compared with 20,000 tonnes in the previous year; 4,900 tonnes of lemons were shipped compared with 767 tonnes in 1978; 7,740 tonnes of mandarins compared with 5,300 tonnes the previous year; and grapefruit were up from 550 tonnes to 860 tonnes.

New Zealand retained its position as the major market country taking 9,800 tonnes, 22 per cent of the total fresh citrus exports.

In addition to the figures for New Zealand, shipments to South East Asia and Pacific Islands totalled 18,230 tonnes representing 40 per cent of the exports. Europe and Scandinavia took 11,220 tonnes (25 per cent); the Middle East and Persian Gulf area took 3,600 tonnes (8 per cent) and Canada 2,150 tonnes (5 per cent).

South Australia contributed 53 per cent of the 1979 exports followed by Queensland 29 per cent, Victoria 15 per cent and NSW and Western Australia contributed the remaining 3 per cent.

Export Conference

The Australian Citrus Growers Federation convened a Citrus Industry Export Conference in Melbourne on 13 March to consider the results of the 1979 season

and to plan for the continued development of our citrus export markets in 1980.

The Conference was attended by 40 representatives of growers, packers, exporters, shipping companies, the Commonwealth Department of Primary Industry and State Departments of Agriculture.

The opening address was given by Mr. W. J. Bettenay, Chief Fruit Officer (Exports) of the Department of Primary Industry who congratulated ACGF on calling the meeting.

Mr. Bettenay stressed the need for care in fruit handling in the orchard, in the packing shed and in transit for Australian citrus to outturn with top quality and in good condition.

He said that co-operation between the whole citrus industry, government officials and shipping companies was necessary to achieve the best results.

Although not present at the meeting, details of reports presented to the industry by the Fruit Officer, London for 1979, Mr. Gordon Edwards of Tasmania and the Fruit Officer, SE Asia for 1979, Mr. Jack Turpin of NSW, were tabled and discussed.

Sevenpoint Plan for Action

Mr. Ian Pegg, Senior Research Officer (Cool Storage), Victorian Department of Agriculture addressed the Conference on "Technical Problems in the Export of Citrus Fruits" and detailed the following seven major factors which would help to ensure good results:

1. **Grow good market quality fruits:** Good bud lines, a balanced use of fertilisers and skirting were a few of the important management factors.
2. **Pick for market, not for juice:** Good picking technique was essential. Rind damage and loss of the button were the two main injuries that allowed fungi to infect fruit.
3. **Treat with fungicide before it was too late:** Most fungal infections started with injuries at picking. Fruit for export must be treated with a fungicide within 24 hours of picking. If arrangements can't be made for this treatment at the packing shed, the dip treatment must be given at the orchard.
4. **Use the right fungicide at the right concentration:** Fungicide concentrations which fell below 80 per cent of the recommended rate were unlikely to give adequate protection.
5. **Handle with care:** The smell of rind oil in a packing shed meant that some fruit was being injured. Clean the dirt out of the hopper and bins daily and wash the whole line each week using 1 per cent SOPP.
6. **Pack properly:** The profits of packers and growers depended on how well fruit was packed. Select the fruit carefully and do not overpack.
7. **Importance of Good Transport:** Always ensure that fruit is transported correctly.

The Conference resolved to recommend to Grower Organisations, Citrus Marketing Boards and Departments of Agriculture in each State that all procedures

for the harvesting, packing and transport of citrus fruits for export be closely monitored and, where necessary, appropriate recommendations be circulated to the industry for improving these procedures.

It was also suggested that an effective communications system be established in each State to ensure that any such recommendations are implemented.

THE FUTURE — 'THROUGH A GROWER'S EYES'

(Continued from page 5)

I have been conscious that ultimately growers must make decisions to adopt new practices based on conference reports such as we have listened to for the past week. A correct assessment of these reports is difficult to achieve, and the adoption of a particular new technique is often a matter of financial priority in the total area of good management. The role of extension officers with sufficient experience to relate science and technology to the grower's needs becomes increasingly vital to the progression of our knowledge in the field of citriculture. Perhaps we should all be stressing this need to educators, with every endeavour being made to attract more interest in a field the importance of which may not have been adequately recognised to date by those looking for a profession.

During this meeting we have heard excellent reviews, and then discussed detailed aspects of the industry related to our various fields of interest. I believe we have again reaffirmed the knowledge that we belong to a unique fraternity of citriculturists—all trying to understand and improve one of the world's most valuable horticultural resources. I think it worthwhile stating that one of the unique aspects of citrus growing throughout the world is the openness and willingness to share information and material on an international basis—a facility not often encountered in industry and commerce.

We have been conscious in Australia of our isolation from the world scene, and so it was heartening to see so many overseas delegates attend this meeting and provide the stimulus for Australians to consider themselves an active part of the general citrus fraternity.

I think it timely and appropriate that I should conclude my remarks with an appreciation of the tremendous amount of work and organisational perfection demonstrated by the NSW Congress members involved with the total conference organisation. Whilst this Congress has been organised on a national basis with major contributions from most States, nevertheless the NSW section has borne the major work load, and as delegates we have seen how well the meeting has proceeded. I would like to express a general appreciation of the operation which has contributed so much towards the most important part of the conference. That is the facility we have all shared and enjoyed in meeting delegates from all disciplines as well as those who share our areas of specific concern.

March, 1980

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CITRUS CO-OPERATIVES JOIN FORCES

The Rivergrowers Co-operative Limited and Waikerie Co-operative Producers Limited have joined forces in South Australia to market citrus within Australia from the beginning of the coming navel season.

Both organisations will continue to export through Riv-Sam Pty. Ltd. but will operate jointly in the domestic market.

The Rivergrowers Co-operative already represents a joining of the Co-operatives at Loxton and Renmark.

The new arrangements are expected to enable the packers to give a better service to their wholesalers and retail customers and at the same time enable them to contain the costs of selling fruit.

Both companies have reported a strong demand for their products during the past year and the new venture should lead to further benefits for growers, the trade and for consumers.

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FEBRUARY SUMMARY

STORAGES

	Capacity Megalitres	Week ending 27-2-80 Megalitres
Hume Reservoir	3,038,000	1,643,000
Lake Victoria	680,000	297,000
Menindee Lakes	1,794,000	1,444,000

WATER FLOWING TO SOUTH AUSTRALIA

Week ending 27-2-80	47,000
Monthly entitlement for February	194,000
Total for February to 27-2-80	181,000
Total for January	217,000

WATER QUALITY

(Average quality for week — total dissolved solids in parts per million)

	28-2-79	27-2-80
Swan Hill	150	124
Euston	120	167
Red Cliffs	228	230
Merbein	342	309
Lock 9	280	354
Lake Victoria	271	294
Berri	334	342
Waikerie	394	450
Mannum	324	468
Murray Bridge	318	456

— (Extracts from River Murray Commission Reports)

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TREE SIZE CONTROL IN FLORIDA

By R. L. PHILLIPS, Fruit Crops Department, IFAS University of Florida.

Hedging and Topping Citrus in High Density Plantings

Abstract. Proper control of vegetative growth is essential in high density plantings for maintaining maximum fruit bearing surface, obtaining high quality fruit and facilitating cultural and harvesting operations. Pruning vigorous trees to contain them within an allotted space in a high density planting stimulates excessive vegetative growth at the expense of fruiting wood. Pruning should be started early in such plantings with maintenance pruning at intervals which would avoid severe cutting. Slow growing trees respond more favorably to pruning and can be maintained at a given size and shape without sacrificing yield. Optimum tree dimensions of pruned trees are based upon interrelationships among width, foliage depth, height, hedging angle and middle width which expose the maximum amount of foliage to adequate sunlight.

High-density plantings of small trees, designed with their foliage positioned for maximum fruit yield and for efficiency in cultural and harvesting operations, may be the answer for highly profitable citrus groves of the future. However, the advantage of high initial fruit yields will be short-lived if proper control of vegetative growth is not maintained. High-density plantings have been quite successful in the apple industry where dwarfing rootstocks and interstocks, together with various

tree training programs, have been used to control and direct vegetative growth (2, 3, 7).

Most high-density citrus plantings in Florida have not been successful for very long because the trees were too vigorous for their allotted spaces. The trees soon competed with each other for light, water and nutrients as they increased in size. Crowded conditions resulted in loss of lower foliage, decreased fruit yield and quality and interference with cultural and harvesting operations. Pruning, to alleviate crowding, often resulted in stimulation of excessive vegetation growth at the expense of desirable fruiting wood. The success of high-density plantings will depend upon maintaining the trees at an appropriate size and shape without sacrificing yield potential.

Some Pruning Principles

Most citrus trees tend to develop a hemispheroidal shape when left to grow naturally. Hedging or topping by machine prunes the sides and tops in straight lines, resulting in flat surfaces. New growth is stimulated in relation to the amount removed, being greatest where the most severe cuts are made. Pruned trees, therefore, tend to resume their natural shape.

Pruning involves both mass removal of vegetative growth by hedging and topping and selective removal by hand-held equipment. Both methods can be effectively utilized and have their place in controlling tree size and shape. Hedging and topping are forms of mass heading back which removes terminal portions of branches, destroying apical dominance and stimulating lateral bud breaks. This has a tendency to produce a more bushy, compact tree. Selective pruning may be helpful by removing excessively vigorous shoots at their base to prevent their regrowth. The larger the shoot, the more vigorous the regrowth would be. Upright growth is generally more vigorous and less fruitful than is horizontal growth. Upright shoots may be removed and horizontal growth favored by selective pruning.

The importance of sunlight in the production of high yields of good quality citrus fruit cannot be overstressed. The amount of light intercepted by the leaves determines production potential. Light provides the energy for photosynthesis which produces the basic foods upon which the trees live and bear fruit. This process is carried out mostly in the leaves which must be exposed to sufficient sunlight for it to take place.

Few fruit are produced where sunlight is inadequate and branches die when light is insufficient to maintain them. A reduction in light also leads to a delay in fruit maturity and poor colour development. Therefore, tree size, their shape and the distance between their sides should be adjusted to expose the maximum amount of foliage to direct sunlight.

The quantity of light required for fruit set and maintenance of bearing foliage is not specifically known for citrus. Light intensity within the tree canopy decreases drastically with the distance from the outer periphery because of shading by outer leaves (7). The depth of fruit bearing foliage depends upon the penetration of adequate light into the tree. Light which is transmitted through the leaves also changes in quality, making it still less effective in photosynthesis.

High fruit yields have a tendency to reduce vegetative growth. It is very important for trees in high-density plantings to begin producing good fruit yields before crowding occurs and pruning is required. Otherwise, vegetative growth control will be more difficult and poor fruit yields will probably result. The balance between tree growth and fruitfulness appears to depend to some extent upon a relationship between carbohydrates and nitrogenous compounds (8). Moderate growth and high yields occur when both are adequate, while a tree low in carbohydrates and high in nitrogen tends to produce vigorous vegetative growth at the expense of fruit production. Therefore, a reduction in nitrogen application may be useful for controlling tree vigor before or after any substantial removal of foliage. However, unthrifty and eventually unproductive trees could result if this practice is abused.

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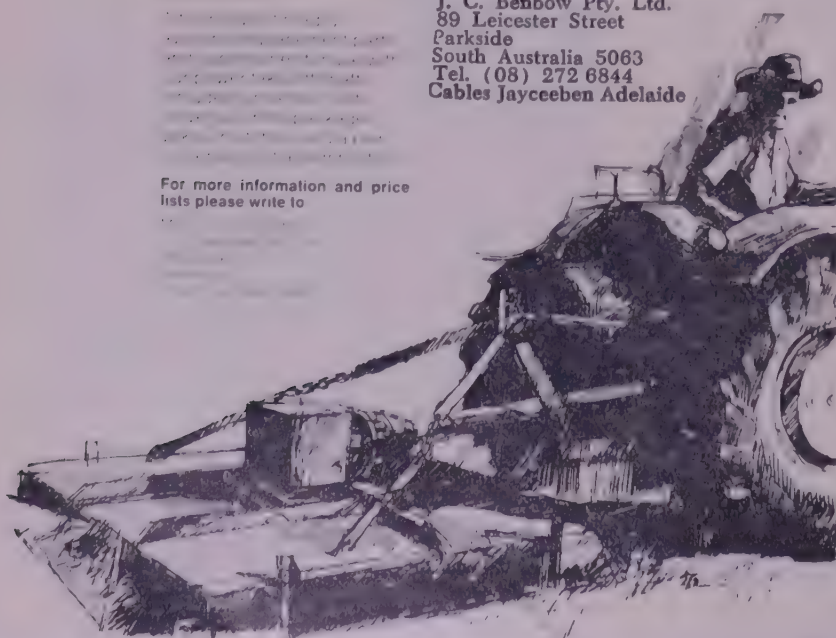
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AUSTRALIAN CITRUS NEWS

(Continued on page 9)

March, 1980

TREE SIZE CONTROL IN FLORIDA

(Continued from page 8)

Tree Size and Shape Control

Pruning practices are largely directed by tree spacing and vigor. Slow growing trees generally perform best in closely spaced plantings and they respond much more favorably to pruning when it is required. Unfortunately, most citrus cultivars possess greater inherent vigor than is desired for high-density plantings. Pruning vigorous trees in a closely spaced planting can lead to a perpetual problem of excessive regrowth at the expense of fruit production. The more vigorous the trees and the closer the spacing, the sooner pruning should be started and the more often it should be done so that only light cutting is necessary and crop reduction is minimized.

Pruning will eventually be required for the control of tree size and shape in high-density plantings. Optimum tree dimensions are based upon interrelationships among width, height, hedging angle, depth of foliage and width of spaces between trees. Optimum tree width increases as the depth of bearing foliage increases. Most citrus fruit is borne in the outside three feet (0.9 m) of foliage where light is adequate for fruit bud formation while the inside area is occupied mainly by supporting structure and is mostly wasted space as far as fruit production is concerned (14).

Theoretically, the greatest amount of fruit bearing volume per unit area could be attained with narrow hedges about six feet (1.8 m) thick with their height and distance between rows adjusted to allow sufficient light to fall upon their sides. Optimum tree height depends upon width of the middles, the hedging angle and tree width. Trees are three-dimensional and production can be reduced if the trees are lower than they need to be for adequate light conditions. However, an increase in height may not result in a proportional increase in productive capacity because fruit density is generally less in taller trees. The optimum angle at which the trees are hedged will be related to the other dimensions so that the maximum amount of foliage per unit area will be exposed to adequate light.

Since high-density plantings have more spaces between trees than those with fewer trees, the volume of fruit-producing foliage can be reduced if these spaces are wider than needed for adequate light and accommodation of grove equipment. The shorter the trees and the greater the hedging angle, the narrower the middles can be for adequate light conditions, but narrower grove equipment would be required.

Much work has been done to determine the optimum tree size and shape for apple trees in high-density plantings. Various training systems, which vary widely in tree size and configuration, have been proposed (3, 4, 7). Some of these may be applicable to citrus. However, this would depend upon the capability to control the growth of the citrus tree and to meet its light requirements for photosynthesis.

Some tree shaping studies with citrus have shown favourable results. 'Duncan' grapefruit trees, spaced 24' x 18' (7.3 m x 5.5 m), were hedged six feet (1.8 m) wide and 15 feet (4.6 m) high in an eight year

study of pruning methods and produced 80 per cent as much fruit from trees that were 38 per cent as wide as those hedged in a standard manner (11). These trees would have produced 49 per cent more fruit per unit area if this level of production could have been maintained in a row spacing suitable to their width.

This assumption cannot be relied upon completely, however, since the trees in this treatment received more light because of wider middles. Studies with 'Valencia' orange did not produce results that were particularly promising but, if the trees had been less vigorous and less pruning had been required, the outcome might have been more favourable. A problem with a vertical hedge of vigorous trees is that the upper portion grows more vigorously and soon shades the lower portion. Therefore, it would be desirable to hedge at an angle which would delay this effect.

'Hamlin' orange trees, spaced 16' x 12.5' (4.9 m x 3.8 m), were hedged at angles of 5, 10, 15 and 20 degrees from vertical (12). Longer shoot growth was stimulated with the two greater angles. There were no differences in average yield after six years. This planting averaged 591 boxes per acre (59.6 kg/ha) in the last half of the study. No topping was necessary with the two greater angles since the hedged sides came together at an acceptable height. Also, a greater proportion of the fruit was located where it could be harvested from the ground.

Many groves have been planted with close spacings between trees within the row and standard spacings between rows. This spacing arrangement allows standard trees to grow for many years before hedging is required to maintain middle widths adequate to accommodate grove equipment and to ensure adequate light conditions on the hedged sides. The sides between the trees are gradually lost and hedgerows result as the trees within the rows grow together. Whether or not it is to the grower's advantage to hedge between these trees depends on the need, tree spacing and tree vigor.

Solid hedgerows have some advantages but they present an obstacle to worker movement between rows and there are no spaces between trees for fruit containers. Attempts to maintain vigorous trees as individuals by cross-hedging are generally impractical when in-row spacing is very close. A compromise, with hedging at less frequent intervals across the rows, may be more practical. This allows two or more trees to grow together as units of foliage. Cross-hedging widths can be narrower, but the hedging angle should be wide enough to allow adequate light to reach those sides.

Another, and perhaps more practical approach with vigorous trees planted at close in-row spacings, would be to thin out trees before they begin to crowd (1). This has been the plan of a number of growers but the decision to thin healthy, productive trees is not an easy one and it is often delayed too long, if done at all. Tree removal can be expensive and fruit yield is usually substantially reduced for the first year. Orchard thinning has had a favourable response in some cases where restoration of the tree skirts and better light conditions have resulted in equal or higher yields (10). However, in

other cases, tree thinning has resulted in lower yields in long-term comparisons (15).

These discrepancies may have resulted from various factors such as cultivar, tree vigor, local conditions and the stage of crowding at which thinning was done. Removal of every third to 10th tree, depending upon tree spacings, would be less expensive than the removal of alternate trees and would provide needed spaces between trees. Groups of two or more trees would then grow together as units of foliage instead of individual trees. Some consideration should be given to possible future thinning when more than two trees remain as a unit.

Citrus groves may also be planted with close spacings in both directions. This results in higher initial yields but crowding and the need for hedging will occur at an earlier age. It is especially advantageous to use trees of low vigor and high precocity in this situation since they require considerably less pruning to contain them within their allotted space, resulting in the retention and production of more fruit-producing foliage. An extensive thinning program, which could involve removing trees in both directions, should be considered to avoid excessive pruning and reduced yields when standard trees are closely spaced in both directions.

Trees cannot be satisfactorily maintained in such a planting unless they begin to bear heavily before they begin to crowd each other. High yields have been maintained in a 15' x 10' (4.6 m x 3.1 m) spacing of relatively vigorous trees in a Florida spacing study by early and regular pruning practices (13). Fortunately, the trees had begun to bear well before pruning was required. It is important to note that it was possible, in this case, to obtain excellent yields from a planting of vigorous trees in a high-density planting. However, fruit density was not as high on these trees as it could have been, because of the stimulation of excessive vegetative growth at the expense of fruit-producing foliage. Therefore, higher average yields could probably have been maintained if the trees had not been as vigorous and required as much pruning to avoid crowding.

Current Pruning Practices

Most citrus groves will eventually become overcrowded if they are left unpruned. This will occur at an earlier age and be more severe when the trees are closely spaced. Hedging is a common practice to maintain favourable light conditions and to facilitate cultural and harvesting operations (4, 6, 9). The middles between rows must be sufficiently wide to facilitate movement of present orchard equipment through the grove. The average hedging width is about eight feet, but it may vary from seven to nine feet wide. Growers have found that it is best to begin a hedging program before the trees have actually become crowded. This would avoid heavy cutting which can cause excessive vegetative growth and a drastic reduction in subsequent yield. This is especially important when the rows are spaced close together.

(Continued on page 12)

"Good Food Friends" Scheme Launched

It is possible that by the end of 1980 almost a million primary school children in Australia will know the Good Food Friends.

Through these new friends they will begin to learn the principles of good nutrition.

The Good Food Friends is the project of Australian National Commodity Boards and Primary producer Organisations and it was launched in Melbourne during March. It is supervised by State and Federal Educational and Nutrition Authorities.

The programme will try to combat the attitude that good foods are not much fun.

Foods from the five basic food groups will be represented by "fun food characters" like Jolly Orange, Lenny Lettuce, Captain Carrot and Percy Pear.

The project, costing more than \$100,000 will try to modify eating patterns influenced by extensive food advertising each year.

Speaking at the launching of the project, the principal nutritionist of the



"Jolly Orange"

Commonwealth Department of Health, Mrs. Ruth English, said that most advertised foods were of low nutritional value.

She said the project was designed to encourage children to eat from each of the five basic food groups each day.

These were: bread and other cereals; fruits and vegetables; meat and meat substitutes such as eggs, poultry and fish; milk and milk products; and the butter and table margarine group.

The scheme was created and produced by Nutrition Advisory Services Pty. Ltd. with development funded by the recently formed Australian Council of Good Nutrition, non profit making organisation.

The Council comprises the following organisations:

Australian Dairy Corporation

Aust. Canned Fruit Sales Promotion Committee

Rice Marketing Board

Australian Apple and Pear Corporation

Australian Egg Boards

Flour Millers' Council of Australia

Australian Citrus Growers Federation

Australian Dried Fruits Association

Potato Growers of Australia.

Schools can purchase \$60 teaching aid kits containing six 40-page illustrated books of activities and motivational interest, 24 colour cards that introduce the Good Food Friends as characters, 50 related real food colour cards, 3 colour posters, things to do with food colour cards, activity stencil cards, glove puppets, a cassette tape with stories and several food songs, and a teacher idea guide.

(Continued on page 12)

Citrus Council Formed

A meeting of national citrus industry organisations has agreed to the establishment of an Australian Citrus Industry Council to provide a forum for discussion on all matters affecting the Industry.

Member organisations of the Council will be the Australian Citrus Growers Federation, representing commercial growers of citrus fruits in Australia; the Australian Citrus Processors Association, representing processors of citrus fruits; and the Australian Fruit Juice Association, representing that section of the industry involved in converting citrus juice concentrates to a single strength consumable product for distribution to the market.

The President of the Australian Citrus Growers Federation, Mr. J. Darnley Naylor of Leeton NSW, has been elected as the inaugural President of the Council. Mr. Ken Nugan of Griffith, President of the Australian Citrus Processors Association, is the Vice President and Mr. David Wade of Sydney, President of the Australian Fruit Juice Association, is the third member of the Council's Executive Committee. Secretary of the Council will be Mr. E. H. Cope, the General Secretary of the Australian Citrus Growers Federation, and the office will be situated in Adelaide.

In a statement issued after the establishment of the Council, Mr. Darnley



Mr. J. D. Naylor

Naylor said that the Council represented a major milestone in the history of the Australian Citrus Industry.

He said that as well as providing a forum for industry discussions, the Council would collate industry statistics; develop co-operation on matters of common interest such as market research and promotion and would enable consideration to be given to the longer term prospects and trends of the Australian Citrus Industry.

Mr. Naylor said that the operations of the Council would be financed by the three member organisations.

He said the Council had already established special committees to develop plans for market research and promotion and to improve the collection of citrus industry statistics.

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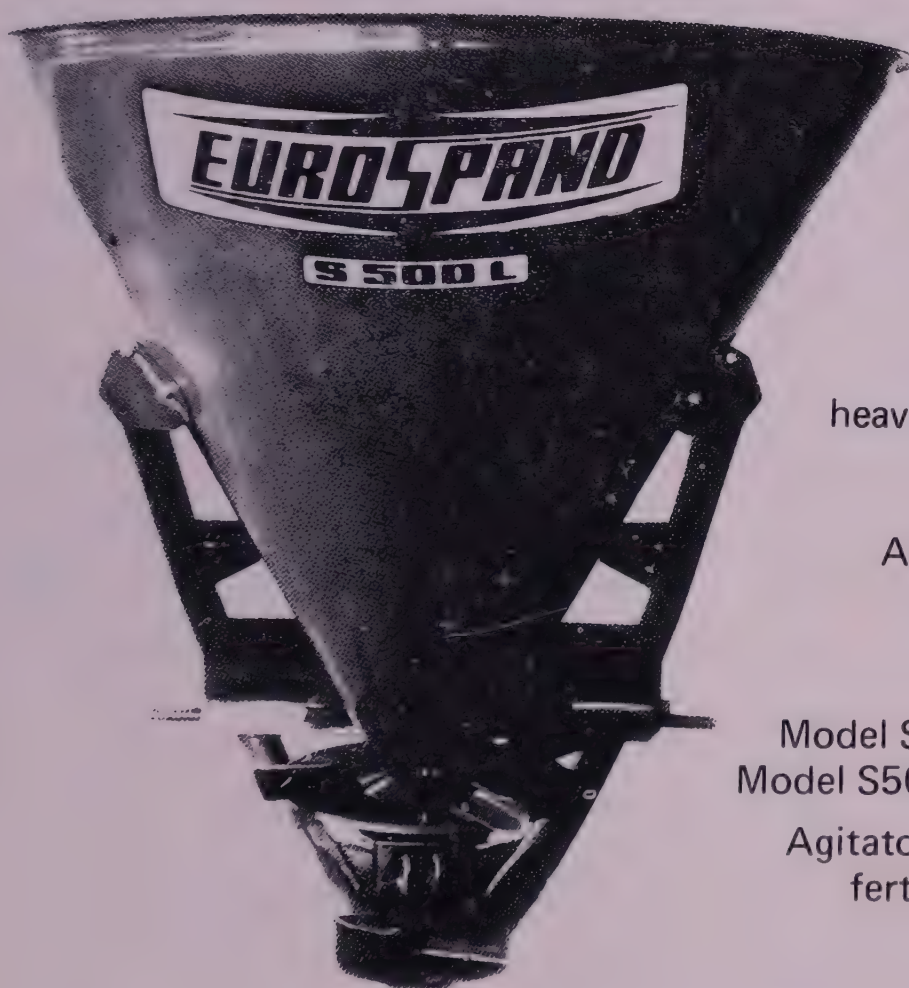
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TREE SIZE CONTROL IN FLORIDA

(Continued from page 9)

Growers are having problems with vigor when standard trees are planted in rows spaced closer than 20 feet apart. Eventually, they may also have a problem when they are hedging to large stubs. Corrective hedging may involve hedging one to two feet off-centre to cut back the larger branches on one side while allowing the other side to grow and fruit well. When hedging is again required, it should be done off-centre on the other side of the middle. Hedging could be done down the middle the next time or it could be done on alternate sides in succeeding years.

Hedging is usually done at an angle so that the hedged middles are wider at the top, allowing more light to reach the skirts of the trees. Hedging angles being used vary from nearly vertical to 30 degrees, with 10 to 15 degrees from vertical generally being considered the most satisfactory. Greater hedging angles can result in greater stimulation of long shoot growth to contend with. A hedging angle greater than 20 degrees would probably not be satisfactory when rows are spaced quite close together.

Many citrus groves in Florida have been planted with close spacings within the row, especially in recent years. Some growers have allowed the trees to grow together to form hedgerows while some others hedge every middle across the rows. Many growers compromise by cross-hedging between every two or more trees, resulting in blocks of trees growing together as a unit. Narrower widths of four to five feet are commonly being used for cross-hedging between closely-planted trees. Hedging angles of 5 to 10 degrees are being used so that adequate light will reach those sides. Frequency of cross-hedging varies from every year to every fourth year depending upon tree vigor and spacing, with two years being the most common interval for any particular middle.

Some orchard thinning is being done to avoid cross-hedging between closely-spaced trees. Many California citrus growers who had planted trees at a spacing of 22' x 11' (6.7 m x 3.4 m) have removed alternate trees because of problems with excessive crowding (10). A few growers in Florida have removed alternate trees while some others are removing every third to eleventh tree to make multiple tree units.

Topping is commonly practiced to achieve lower harvesting costs, better spray coverage and larger fruit sizes. Topping height may vary from 10 to 20 feet, but is usually about half-way between. It depends upon variety, vigor, hedging angle and spacing. Varieties intended for the fresh fruit market are often topped lower and more frequently to obtain larger fruit. An angle of 15 degrees from horizontal is commonly used, but it may vary from a flat-top to 30 degrees. Closely-spaced rows, and those with a sufficient hedging angle, can be flat-topped with a single pass of the boom. Topping may not be necessary when closely-spaced rows of trees are hedged at an angle which results in their sides meeting at an acceptable height.

One of the major problems with standard trees in high-density plantings is that of an excessive vegetative response to hedging and topping. Some growers have at least partially solved this problem by maintaining careful nitrogen control. Sufficient nitrogen is needed for tree health and fruit production, but excessive amounts could result in unwanted vegetative growth. Citrus growers in most other areas do not have as much of a problem with excessive vigor in high-density plantings because of cooler, less humid climates and the use of inherently slower-growing trees (9).

Budlines commonly used in Spain are old and slow-growing. Tree size in their high-density plantings is contained by extensive and detailed hand pruning. The objectives are development of a good scaffold structure and fruit distribution throughout the tree. Considerable hand pruning is also employed in Japan for training trees and limiting their size in high-density plantings. Very little hand pruning is practiced in Florida citrus groves because of its higher cost and greater tree vigor. However, some selective hand pruning may be justified in high-density plantings for corrective pruning and removal of vigorous upright shoots.

The Future

The citrus grove of the future should be thought of as a unit of plant foliage, manipulated to provide the greatest fruit-bearing surface possible and trained to facilitate mechanization of production and harvesting operations in an assembly line fashion. New developments in tree size and shape control will enhance the desirability of high-density plantings and revolutionize the citrus industry. The most desirable tree spacings, tree sizes and tree shapes for optimum grove performance will be determined. Growers will be able to select trees which will be slower growing and highly fruitful because of dwarfing rootstocks or interstocks (5). Chemical control of vegetative growth is a relatively new development which may have a future in high-density plantings, particularly for controlling regrowth after hedging and topping.

Cultural and harvesting programs will be developed and integrated into optimum management systems for high-density plantings, will be available. Smaller equipment, more suitable for high-density plantings, will be available. This will

(Continued on page 13)

AUSTRALIAN CITRUS NEWS

"Good Food Friends" Scheme Launched

(Continued from page 10)

The kits are available from Nutrition Advisory Services, Box 804F, G.P.O. Melbourne.

One of the songs on the cassette tape goes as follows:

"You get up in the morning,
ready to eat,
Milk on your cereal is really neat,
Boil an egg, butter some bread,
Cut up an orange and squeeze it instead

No single food is featured or favoured within the scheme, and a wide range of wholesome foods are represented in a truly balanced manner.

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TREE SIZE CONTROL IN FLORIDA

(Continued from page 12)

allow middles to be narrower and trees to be shorter without sacrificing yield potential. The successful high-density planting of the future will require proper planning and a high level of management, but the results should be worth the effort.

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— Reprinted from The Citrus Industry Magazine, Florida, U.S.A. November, 1979

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DON'T RISK THE ROT

By RALPH CADMAN, Victorian Department of Agriculture, Mildura

'Prevention is better than cure' is a well used but very true adage when it comes to the problem of avocado root rot (*Phytophthora cinnamomi*) in avocado orchards. Avocado root rot just about spells disaster for a grower once it enters an orchard, because once it is introduced, it is there to stay.

In the first part of this series on January 16, I discussed the disease and how it was introduced into some Sunraysia orchards as well as methods of isolating orchards from this disease.

Once the orchard can be isolated and quarantined from the possibilities of introduced infection; the next step for a new grower to think about is to plan the property and the future orchard management program, so that the growing environment is ideal for plant growth and cropping and yet hostile to the establishment of root rot fungus.

SOILS

Avocado root rot is a water mould fungus which becomes prevalent during warm weather in over-watered, undrained, and boggy soils. The major consideration when planning an orchard is to select the best, free draining soils. Avocados do not like limey soils, the best soils to select are sands or sandy loams, similar to those that grow citrus, with about 80 cm of top-soil overlying a clay or limey sub-soil.

Avocados have been known to grow successfully on heavier loams, however

considerable care needs to be taken to see that water does not lie for too long on these soils. One method that is used to avoid 'ponding' on these soils is to hill the rows by grading a 50 cm high bank on which the trees are planted, allowing for run-off of surface water.

DRAINAGE

Avocado root rot has become evident in Sunraysia, mainly when drains have become blocked and water tables have risen to the root zones of trees. For this reason sub-soil drainage is essential in avocado orchards. It is also important to be able to regularly check, that drains are working. This is possible with the installation of networks of test wells. Deep placed tensiometers used for monitoring soil moisture to determine irrigation timings can also detect the existence of over-wet soils.

MULCHING

The use of straw or other organic mulches under avocado trees have also been shown to reduce the likelihood of avocado root rot.

Many of the micro-organisms which bring about and are associated with the break-down of decomposing organic matter, particularly legume mulches, are antagonistic to or live on avocado root rot fungus. For this reason it is important to maintain a 10 cm deep mulch under all trees.

The planting of a mixed perennial cover crop of strawberry clover, perennial rye grass and lucerne between the tree rows, can provide all the mulch required. This can be provided by regularly slashing the cover crop with a side-throw slasher which will throw the mulch under the tree canopies.

Cover crops have other important attributes in that they transpire off excess surface and sub-surface water after heavy rains or irrigations. They also keep avocado trees root systems cool and encourage surface root growth as well as reducing irrigation run-off and provide additional organic nutrients for trees.

IRRIGATION

Avocado trees have a high water requirement and it is important to keep soil moisture in the root system as close to field capacity as possible. For this reason it is easy to over-water them, particularly on heavier soils. To make sure that both over-watering and under-watering does not occur, tensiometers or soil moisture meters are now commercially available to monitor this situation.

NEW CONTROL FOUND

Over the last year a new chemical fungicide has become available which should give new hope to avocado growers. The chemical is a systemic fungicide called Ridemil*, which applied as a soil drench in an orchard or a nursery situation has successfully been able to rehabilitate trees. Although the chemical has shown excellent results, it appears that control is not absolute and some residual contamination remains.

Where control is required over a small isolated area and trees are badly affected, then they should be removed and the area fenced off. The soil can then be treated with methyl bromide fumigation and the soil allowed to dry out for a season.

If symptoms are evident over a larger area then trees should be treated with Ridemil* applied at a rate of 20 grams of commercial product (25 per cent W.P. formulation) per square metre as a soil drench beneath the tree canopy.

Finally, avocado root rot is not the plague, it can be controlled and trees rehabilitated with sound management practices, but for the future of the industry in this area and your neighbours properties it would be wise to voluntarily quarantine your own property and let other people know about the problem.

* Registered trade name.

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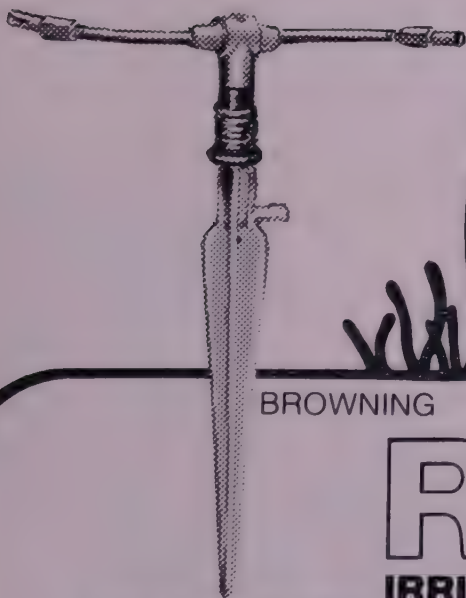
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Juice and grated rind of 2 lemons;
70 ml white wine;
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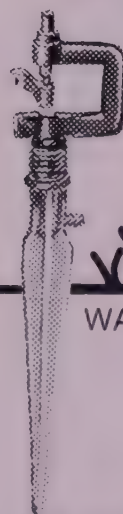
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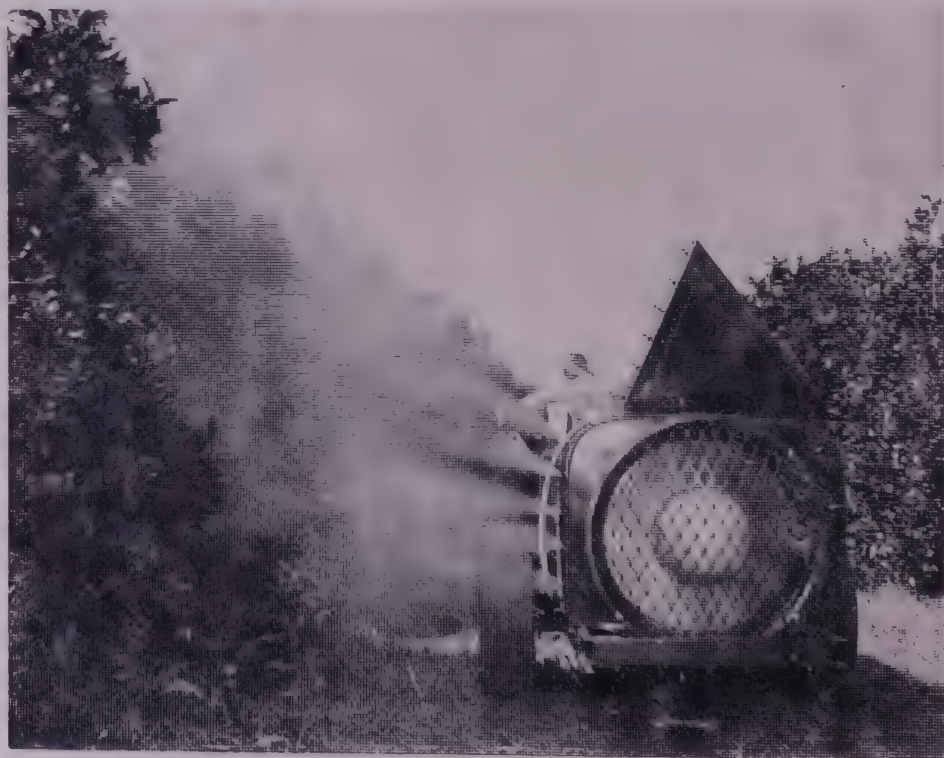
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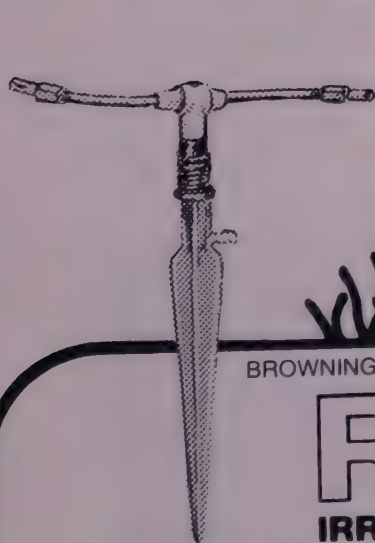
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IMPORTANT TAX CONCESSIONS ON FARM WATER SUPPLIES

The Prime Minister, Mr. Fraser, has announced that tax concessions for water storage and reticulation plant on farms has now been changed back to the pre-Labor Government situation whereby all plant can be written off at 100 per cent of value in the year of purchase.

The decision was announced as part of a total drought relief package.

Bores, wells and dams, and reticulation facilities are involved in the amended tax concession arrangements.

Mr. Fraser said that from now on these items could be written off as capital items at 100 per cent of their cost.

He said the decision taken by the Government had resulted from discussions held with the Minister for Primary Industry, Mr. Nixon.

The decision has been welcomed by citrus growers and other horticultural producers.

EDITOR'S NOTE: The Australian Horticultural Growers Council Executive Committee met with the Minister for Primary Industry, Mr. Nixon, and the Government Parties Rural Committee in Canberra on March 31. One of the items in the AHGC submission was a request that the full cost of materials and services involved in the exploration, development and reticulation of farm water supplies be allowed as a tax concession in the year of expenditure.

NEWS FROM OVERSEAS

Reports indicate that parts of Florida had a severe frost during March.

Early estimates are that about 10 per cent of the citrus was affected by the one night freeze.

* * * *

The Government of Japan announced recently that the import quota for citrus juices for the year ending March 31, 1980 was 3,000 tons of orange juice concentrate (5 to 1 basis) and 1,000 tons of grapefruit concentrate.

— "U.S.D.A. News"

* * * *

Total 1979/80 citrus production in the Mediterranean Basin (eight major production and exporting countries plus the Gaza Strip) is forecast at 10.94 million tons, about the same as last season and for the two previous seasons. Expected production gains in Morocco and Egypt are likely to be offset by losses in Greece and Israel.

The region's forecast production of oranges is 7.05 million tons, close to one per cent below last season. The largest producer is Spain with forecast production of 1,698,000 tons (1,630,000 tons in 1978-79), followed by Italy with 1,641,000 tons (1,619,000 tons). Output in Israel is forecast to be down to 934,000 tons (981,000 tons), but Morocco's production should climb to 678,000 tons (630,000). The re-

gion's total orange exports are likely to remain close to last year's level of 2.6 million tons. Increased exports by Spain and Morocco should be offset by declines in Greek and Israeli shipments.

Tangerine production in the Mediterranean region is forecast to be down 4 per cent in 1979-80 to 1.67 million tons. This is due mainly to the smaller Spanish crop which is forecast at 792,000 tons (868,000). The region's tangerine exports are likely to remain near last season's 800,000-ton level.

Lemon production in the Mediterranean Basin is forecast at 1.5 million tons, 8 per cent above last season. Forecasts show increases for all major producers with Italy expecting a crop of 745,000 tons (730,000 tons), Spain 307,000 tons (268,000 tons), Turkey 220,000 tons (170,000 tons), Israel 153,000 (134,000 tons). The region's exports for this season are forecast at 660,000 tons, up 16 per cent from last season.

Grapefruit crop forecasts in the region total 600,000 tons, down 7 per cent from 1978-79. Israel accounts for about three-quarters of the grapefruit produced in the Mediterranean region, and the 1979-80 crop is expected to be 450,000 tons (494,000 tons). Israel may ship 240,000 tons this season, down 5 per cent from last year. Exports from other suppliers, mainly Cyprus and Gaza, will be about the same as last season.

— "U.S.D.A. News"

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INDUSTRY DOINGS

The Department of Primary Industry has advised details of the Australian Fruit Officers who will be stationed overseas during 1980 to report on outturns of apples, pears, citrus fruits, etc. in overseas markets.

Mr. Shaun Keenan, the Department's Fruit Exports Standards Officer at Mildura, will be going to Singapore for the three month period ending late July to cover fresh fruit and vegetable shipments to South East Asia.

Mr. A. E. Baker, Principal Officer (Plants Inspection Branch) with the Horticultural Division of the Western Australian Department of Agriculture, will be stationed in London for a period of six months to cover shipments to Europe.

Mr. Keenan is well known in the citrus industry, being a brother of Mr. Michael Keenan, Chairman of the Murray Valley (NSW) Citrus Marketing Board and representative of growers of non-canning fruits on the FISCC.

The Murray Citrus Growers Co-operative Association held its 58th Annual Meeting at Barmera, S.A., on Wednesday, April 30, 1980.

Guest speaker was Mr. P. T. Sanders, Chairman of the Citrus Organisation Committee of S.A.

The MCGCA has been busy in recent months organising arrangements for a greater promotion of "Riverland" brand citrus fruits on the Australian market.

Negotiations have been completed with packers to establish a "Riverland Trade Mark Committee" to administer and promote Riverland brand citrus.

The "Riverland" brand was first registered by Murray Citrus Growers in 1931 and was used only in South Australia until just after World War II.

From that time Sunraysia packers were permitted to use the trade mark.

In 1967 Murray Citrus Growers handed over their business operations to C.O.C. who established a company, South Australian Citrus Sales, to use the name throughout Australia. This company ceased operations in the early 1970s and although the name has still been used extensively since that time, the use of the brand has not been under any direct industry control.

Murray Citrus Growers now plan to revive the brand and full details of the project were presented to the annual meeting, on April 30.

Recipe of the Month

Oranges and Strawberries in Red Wine

3 punnets of strawberries
6 oranges
2 cups of red wine
300g sugar

Wash and hull the strawberries. Squeeze three of the oranges for their juice and cut the other three into segments.

In a salad bowl gently mix the strawberries, the sugar, the orange juice and orange segments and the red wine. Leave to marinate in the refrigerator for one hour and serve.

Serves six.

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LEMON PRICES INCREASED

The FISCC minimum prices for factory deliveries of lemons in the 1980/81 season have been increased by \$5 per tonne.

The prices set by the Fruit Industry Sugar Concession Committee at its meeting in Sydney on Tuesday April 22 were \$110 per tonne for city factories and \$104 per tonne for country factories.

Deputations from ACGF and the Australian Citrus Processors Association made representations to the Committee and these representations were supported by written submissions.

Points stressed by ACGF were as follows:

- * Costs of production had increased by 10 per cent during the past year. Of particular importance had been the increase in fuel costs (33 per cent), fertilizers, chemicals, transport and marketing costs.
- * The increased costs justified a price of \$125 per tonne for deliveries to all factories.

- * The estimated crop for 1980/81 was 41,000 tonnes, a reduction of 2,000 tonnes from 1979/80.
- * The estimated distribution of the 1979/80 crop had been 5,000 tonnes to the export fruit market, 15,000 tonnes to the domestic fresh fruit market and 23,000 tonnes to processing.
- * Good prospects again existed for the export of fresh lemons in 1980/81 due to a continued reduced availability in the USA and other producing countries.
- * Exports of lemon juice concentrate in the period July, 1979 to February, 1980 had been equivalent to 690 tonnes of fresh lemons, an increase of 360 per cent over the volume of lemon juice concentrate exported in the corresponding period in 1978/79. Although this was not a great volume, the increase illustrated that exports could be achieved at the current FISCC prices.
- * Reported stocks of lemon juice concentrate had been reduced by nearly 30 per cent and were not considered to be excessive.
- * The processors had again appeared to overstate the problems of supply and demand and further action was needed to lift the image and marketing results of lemon juice and lemon juice products.
- * The extraction of lemon oil was a valuable by-product and should be taken into account in the setting of minimum prices.

- * Imports of lemon juice were not a threat to the industry at the present time.
- * Australian production of lemons had reached a plateau in 1979/80 at 43,000 tonnes and, mainly due to declining production in NSW, the Australian production would level out at current levels.
- * Unless growers received a satisfactory return on lemons, future production levels would decline below market requirements.
- * An improved supply/demand situation existed for the 1980/81 season. Fresh exports were expected to be maintained at 5,000 tonnes, the domestic market was expected to remain at 15,000 tonnes and 21 000 tonnes would be available for processing compared with 23,000 tonnes in 1979/80.

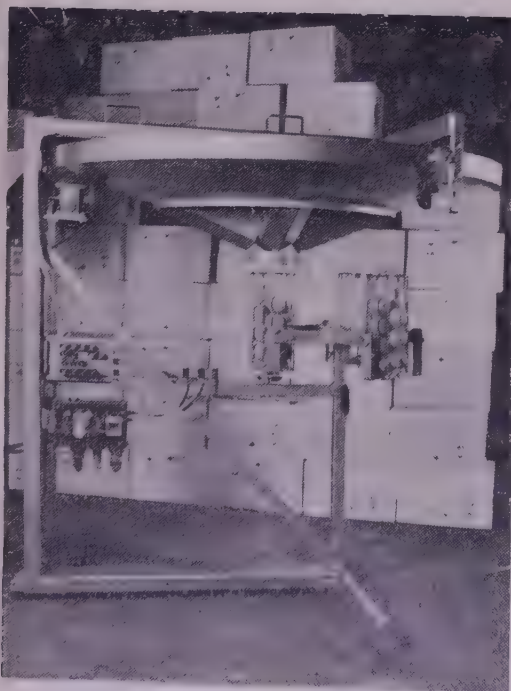
An ACGF deputation, led by the General Secretary, presented the growers' case to the FISCC. Other members of the deputation were Mr. Barry Gherzi, Chairman of the Lemon Board; Messrs. Ted Burgess and Jack Corner, Members of the Lemon Board, and Mr. Max Pettman, Secretary of the Citrus Organisation Committee of S.A.

After the announcement of the FISCC decision the members of the deputation expressed disappointment that growers' net incomes from lemons were still not keeping pace with the increased costs of production.

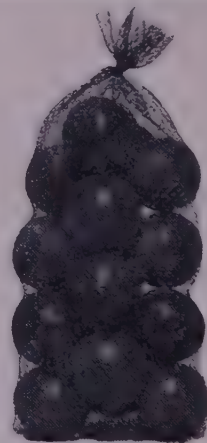
The FISCC will meet at Griffith, NSW on Tuesday 24 June, 1980, to set minimum prices for oranges and grapefruit.

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A Field Day will be held to demonstrate the Bagger at Lucipel Produce of 429 Albert Street, Brunswick, Melbourne, on Friday, 16th May at 2.30 p.m.

DDM FRUIT HANDLING EQUIPMENT

13 White Ave., Bacchus Marsh. Phone: Bus. (053) 67 3850; AH (053) 67 3796

Marketing of Fruit and Vegetables in Plastic Returnable Containers

By BARRY TUGWELL, Senior Research Officer Horticulture, S.A. Department of Agriculture.

The fruit and vegetable industry will gain a considerable reduction in packaging and distribution costs by using one standard system of returnable crates in marketing fresh fruit and vegetables. Plastic returnable crates have been developed to replace the hundreds of packages of various shapes and sizes now used for distribution.

A standard crate of 36 litres capacity has been developed in co-operation with State Departments of Agriculture for the national distribution of fruit and vegetables. This crate has been designed for column stacking on the 1 165 mm square pallet and nests for return freight. A larger crate of 72 litres capacity which will interstack with the 36-litre crate has been produced for distribution of leafy vegetables and a smaller 22-litre crate will be produced if required.

It is essential that returnable crates produced by manufacturers for fruit and vegetables should be compatible with the standard crate and constructed to uniform dimensions to allow interstacking and nesting.

The plastic returnable crate will benefit growers, packers, transport companies, wholesalers and retailers by enabling consignments of fresh produce to be made up into unit loads which can be mechan-

ically handled throughout the distribution system.

CRATE EXCHANGES

Crate exchanges have been established in SA and WA to hire crates to growers and collect and clean them for refilling. Hire charges vary from around 23 cents a fill if the user provides the capital to buy the crates or 30 cents a fill for crates owned by the exchange. Some crate exchanges require the user to pay a deposit up to the value of the crate.

A crate-washing machine, developed by the SA Institute of Technology for SA Crate Pty. Ltd., will ensure that only clean crates are returned to growers and packers for refilling.

Documentation is necessary to provide proof of the transfer of responsibility, prevent users from exceeding their entitlement and enable the crates to be collected for re-use.

PACKING

Plastic crates have been designed to reduce packing costs and stack efficiently on the 1 165 mm square pallet for transport. Ventilation slots have been provided to allow rapid cooling of packed produce before transport to the market.

Plastic crates are ideal for automatic filling to a predetermined net weight. Apples, pears, citrus and tomatoes can be filled direct from grader accumulators

and a vibrator can be used to settle the fruit into the container to prevent fruit movement during transport. Damage to fruit in transit is minimal because the package is designed to take the compression load and the contents are filled to the fill line which is below the top of the package.

Eight 36-litre crates or four 72-litre crates can be stacked in each layer on the 1 165 mm square pallet. The crates can be column stacked five or six high and pallet loads can be stacked up to three high. Individual grades or sizes of produce can be stacked in columns for ease of selection during distribution. Pallet loads can be stabilized for transport with a rope or pallet strap around the top layer.

Fruit and vegetables packed in plastic crates can be cooled quickly because of the open space between each crate and the ventilation slots provided in the base. Forced-air cooling can be used to cool produce within four or five hours of packing, and hydro-cooling can be used to lower the temperature within 30 minutes if required.

DISTRIBUTION OF PACKED CRATES

Returnable plastic crates are ideal for handling with modern materials handling equipment. Crates can be made up into unit loads on pallets for transport to terminal markets for redistribution of produce to retailers.

On arrival at the market or distribution centre the unit loads of crates can easily be unloaded by using a dock leveller and simple pallet jacks.

Pallet racking can be used to provide efficient use of space by allowing pallet loads of produce to be loaded on top of each other with individual access to each pallet.

Retailers can easily inspect the produce through the open-topped crates to ensure that they buy the quality and size range to suit their requirements.

(Continued on page 10)

Figure 1: The 36-litre and 72-litre crates are compatible and are designed for column stacking on the 1 165 mm square pallet.

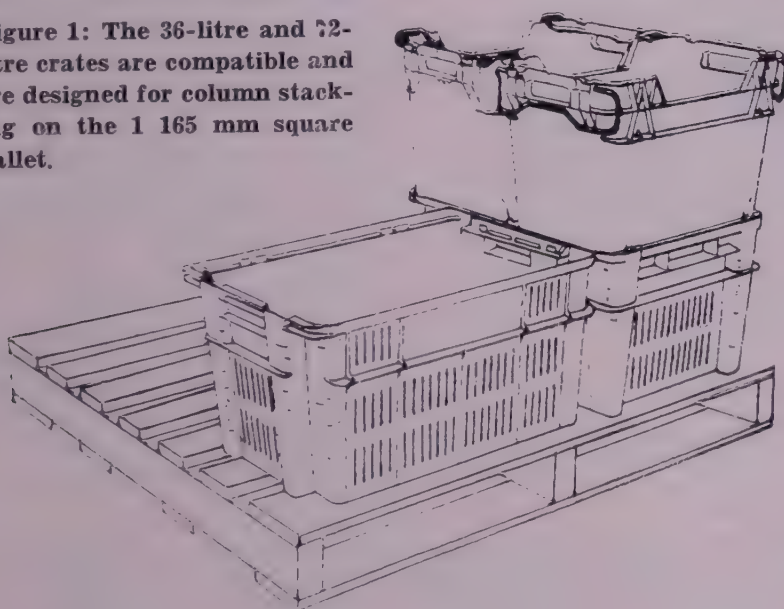


Figure 3: Empty crates stack inside each other for return to the crate exchange.

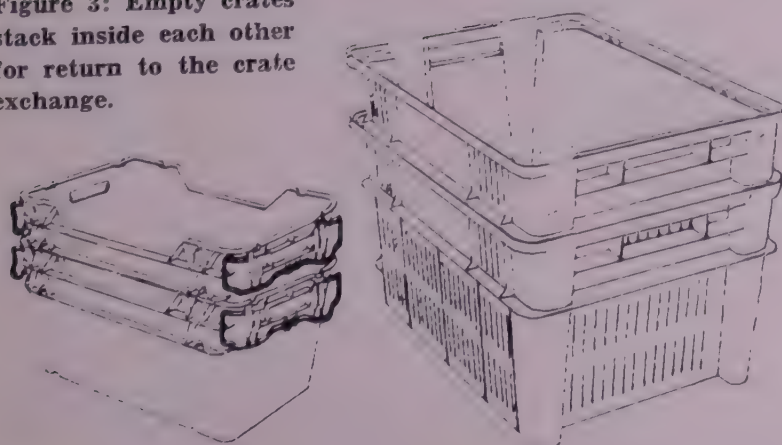
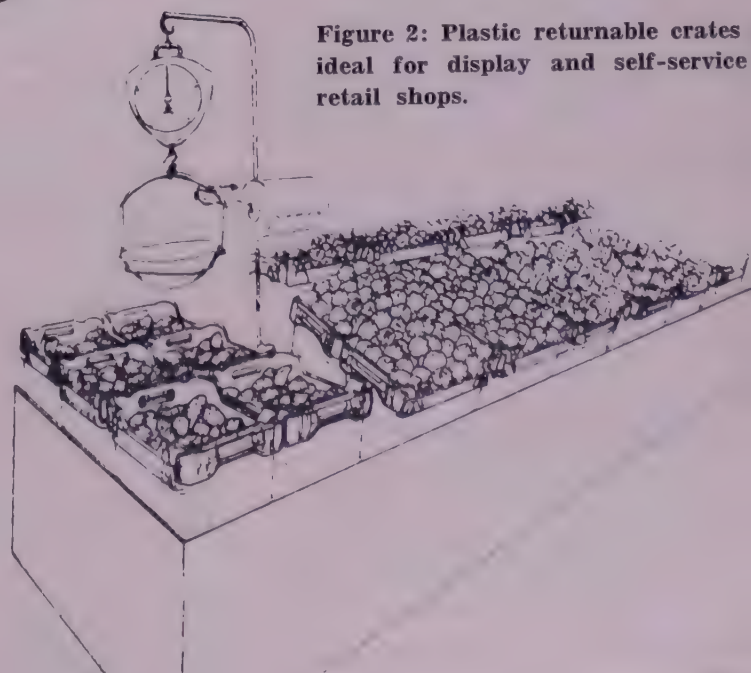


Figure 2: Plastic returnable crates are ideal for display and self-service retail shops.



BUSY PROGRAMME FOR ACGF CONFERENCE

Delegates attending the 32nd Annual Conference of the Australian Citrus Growers Federation at Alexandra Headlands, Queensland, on May 12, 13 and 14 will have a busy programme as the Federation surveys the industry's activities during the past year and assesses the prospects for the 1980-81 and subsequent seasons.

The conference will be officially opened by Hon. V. B. Sullivan, Queensland Minister for Primary Industries.

Addresses will be given to the conference by Mr. Fred Walpole, Manager/Secretary, Central Coast (NSW) Citrus Marketing Board on "The Potential for Increased Density Citrus Plantings"; by Mr. Keith Jorgensen, Senior Horticulturist, Queensland Department of Primary Industries on "Developments in Pest and Disease Control in Queensland"; and by Mr. Dan Smith, Senior Entomologist, Queensland Department of Primary Industries on "Biological Pest Control".

The programme will include visits to local tourist attractions for the ladies and a day tour on Wednesday, May 14, which will include a visit to a research station, a citrus processing plant and a citrus orchard.

CONFERENCE AGENDA

The agenda for the 32nd Conference covers all aspects of the citrus industry and will provide an opportunity for discussion and decision making on a number of important subjects. Details of these matters are as follows:

CITRUS RESEARCH

The conference will consider a Stage I proposal for the immediate establishment of an Australian Citrus Research Committee to plan and fund urgently needed citrus research projects.

A report to be presented to the conference by a special ACGF Sub-Committee will list a number of projects which it considers should be carried out. These, in order of priority, are:—

1. Production — Increased Density Plantings

- The development of rootstocks and scions to suit increased density plantings.
- Further research to establish the viability of virus induced dwarfing or any other form of dwarfing.
- The development of scions which would provide better internal quality of citrus fruit, particularly in respect to total soluble solids and Brix.
- Research into water and fertilizer requirements and application methods for increased density plantings.
- Research into the development and use of orchard machinery suitable to increased density plantings.
- The development of increased density planting recommendations for any major district.

2. Marketing

- Research into the quantities of each variety of citrus fruit delivered and sold in each of the major capital city markets each year.
- Research into the long term storage of citrus fruits aimed at extending the life of good quality fruit.

3. Product Research

Research into improving the palatability and market acceptance of lemon juice and lemon juice products.

4. Packaging

- Research into techniques for sorting, packing and distribution of fresh citrus fruit for home and export markets.
- Research into all aspects of citrus packaging.

5. Harvesting and Handling

- Research into the development of mechanical aids in the harvesting of citrus fruits.
- Continued monitoring of research into the mechanical harvesting of citrus fruits.
- Continued monitoring and screening of post harvest fungicides and methods of application.
- Research into all procedures for the harvesting, packing and transport of citrus fruits for export and the development of a pamphlet incorporating recommended procedures for distribution to the industry.

6. Pest and Disease Control

- Nematodes**
 - Research into extent of nematode populations.
 - Research into methods of control.
- Citrus Dieback**
Further research into citrus dieback.
- Stem End Rot**
Further research into stem end rot.
- Pesticides and Fungicides**
Monitoring and screening of chemicals to control pests and diseases of citrus fruits.
- Herbicides**
Monitoring and screening of herbicides for use in citrus groves.

7. Product Research

- Research on the chemical analysis of orange juice and products containing orange juice with a view to the development of a quality mark for use in the promotion of Australian orange juice and in consumer education.
- Research to confirm whether the "jiggling process" developed by CSIRO for debittering grapefruit juice is suitable for the debittering of navel orange juice.
- Research into the development of "citrus sections" as a product for marketing in the fresh form.

The total estimated cost of the seven projects is \$125,000.

The sub-committee is recommending to conference that urgent priority be given to Item No. 1 (Production — Increased Density Plantings) estimated to cost \$50,000, and that the funds for this project

be provided by a special levy on member organisations in 1980/81 based on the same principles and criteria as the annual contributions by member organisations to ACGF for administration purposes.

The proposed committee would comprise six members representing member organisations of ACGF and the ACGF General Secretary would be secretary of the committee.

Its immediate establishment would enable Project No. 1 to be carried out during 1980/81 pending the development of the Stage II proposal for a Statutory Research Authority.

As Stage II of the proposal, the sub-committee is recommending to the Annual Conference that the Commonwealth Government be requested to introduce legislation to establish a statutory authority for the purpose of collecting funds for research into the citrus industry and directing these funds to necessary projects. The Authority would also be known as the Australian Citrus Research Committee and would take over the functions of the industry committee created in Stage I of the proposal.

The funds for the authority would be provided by a levy on all citrus fruits produced and sold.

The proposed composition of the Statutory Research Committee would be four representatives of ACGF, one person to represent the Department of Primary Industries, one person to represent the Australian Agricultural Council and one person to represent CSIRO.

It is proposed that the administration of the committee would be provided by ACGF.

The proposal envisages that the provision of funds for research which had the approval of the Minister for Primary Industries, would have matching funds made available from the Commonwealth Government.

CITRUS PROMOTION

Another important item on the Conference Agenda is a proposal from the same ACGF Sub-Committee that the Commonwealth Government be requested to introduce legislation to establish a statutory authority for the purpose of collecting funds for promotion and directing these funds to necessary projects. The Authority would be known as the Australian Citrus Promotion Committee.

The funds for the authority would be provided by a levy on all citrus fruits produced and sold.

The Sub-Committee considers that there are four areas requiring promotional activity by the citrus industry.

1. Market and Consumer Research to establish consumer buying patterns, marketing trends, etc., for both fresh citrus fruits and processed citrus products with a view to identifying any areas in which promotional activity should be undertaken.

(Continued on page 7)

Busy Programme For ACGF Conference

(Continued from page 6)

2. **Consumer Education** to make sure that the consumer knows the difference between fruit juices, fruit juice drinks and fruit drinks; is fully informed on the synthetic products available; and is given information on the nutritional content and value of citrus fruits and processed citrus products.
3. **School Project Material** providing our school children with information concerning the industry.
4. **Recipe Material** to encourage the greater consumption of citrus fruits and processed citrus products.

The proposed Promotion Committee would comprise three persons to represent ACGF, one person to represent the Australian Citrus Industry Council, and one person to represent the Department of Primary Industry.

The administration of the committee would be provided by ACGF.

OTHER AGENDA ITEMS

Highlights of other matters listed for discussion at the conference include:

- * Crop Production and Distribution Reports
- * Import and Export Statistics
- * Fuel and Transport Costs
- * Fruit Industry Sugar Concession Committee matters
- * Artificial Vitamin C Beverage Supplements
- * Grapefruit Juice Research
- * Lemon Juice Research
- * Citrus Dwarfing Research
- * The "Good Food Friends" Nutrition Education Project
- * Citrus Export Prospects for 1980/81
- * Marketing of Citrus Fruits in Plastic Returnable Containers
- * Loose-Fill Packaging of Citrus Fruits
- * Relationship of Prices Received by Growers for Citrus Fruits Sold on the Domestic Market and Prices Charged by Retailers
- * Grapefruit Maturity Standards
- * Sale of Citrus Fruit by Weight
- * Reports re:
 - International Society of Citriculture
 - Australian Horticultural Growers Council
 - Australian United Fresh Fruit and Vegetable Association
 - Australian Farmers Federation.

Stop Drop Sprays for Navel Oranges

By R. G. Blain, District Horticulturist, Griffith, NSW

Every season fruit losses occur in navel orange crops due to fruit drop and rind disorders, especially where fruit is being held for late harvest.

If you are thinking of delaying your harvest or have had problems with fruit drop in previous seasons, the spraying of Gibberellic Acid (G.A.) and the stop drop spray 2,4-D on your trees can help to reduce any losses.

G.A. delays the ripening of the fruit, i.e. delays the loss of green pigments, and keeps the rind in a firmer condition. This makes the fruit less prone to injury and rind disorders and thus provides better quality fruit and a higher pack-out with late picked fruit.

The application of 2,4-D delays the formation of the abscission layer between the fruit stalk and fruit. This prevents the fruit dropping off the tree as soon as it is ripe.

As G.A. and 2,4-D are compatible it is possible to combine the two sprays. A combination spray of 10 ppm G.A. and 10 ppm 2,4-D should provide sufficient stop drop control for fruit harvested up until August. If fruit is to be held later than August or fruit drop has been severe in previous seasons the concentrations of 2,4-D can be increased to 20 ppm.

The use of G.A. at a higher concentration than 10 ppm should be avoided be-

cause of further delays in colour development and possible effects on production.

Maximum benefits are obtained from the application of G.A. and 2,4-D after some colour development has occurred in the fruit, usually when the colour has changed from dark green to light green. Depending on the season this usually occurs in late April—early May for Leng Navels and early May—mid May for Washington Navels.

These sprays should be applied thoroughly so that the entire fruit is wet. If not done their effect will be reduced in preventing fruit losses.

Repeat sprays, or split applications of G.A. or 2,4-D are not recommended for there is no evidence to show that a second application of 2,4-D will further reduce drop significantly and due to the possibility of repeated G.A. sprays reducing fruit set and therefore production.

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— INSPECTION WELCOME —

Horticultural Issues in 1980

The Australian Horticultural Growers Council is now distributing a bi-monthly Newsletter to horticultural producers throughout Australia to establish a direct line of communication on matters concerning the industry.

The Council has estimated that there are about 35,000 growers in the horticultural industry producing 3.7 million tonnes of produce with a gross value of \$834 million from 241,000 hectares of land.

Exports in 1979/80 are estimated to total 250,000 tonnes with a value of \$150 million.

The first issue of the Newsletter, to

be known as the Australian Horticultural Growers News Line, has listed the following major issues which are of concern to horticultural growers in 1980.

* **Energy** — this will be the most important issue of the '80s. Assured supplies of fuel to producers at realistic prices is the objective and a policy is being developed for our industry.

* **Chemicals and the Community** — every grower understands the value of chemicals for pest and disease control. However, there is a real need to inform the community of the positive and bene-

ficial aspects of chemicals and their responsible use in our industry.

* **The establishment of a Horticultural panel** — to advise the Government and oversee the trade between Australia and New Zealand especially for those items not covered by the existing panels.

* **Concessional postage for industry publications** — has been withdrawn in some instances. The Council believes this measure of assistance from the Government is essential.

* **Quarantine** — it is vital to every grower that a close watch be maintained on quarantine matters. One slip could cost the industry millions of dollars. Problem areas are brought to the Government's attention immediately.

* **Subsidy on Nitrogen Fertilizer** — horticulture is a heavy user of nitrogen fertilizers and the reduction in the rate of the subsidy has been a blow to growers. Submissions have been put before the Minister for Primary Industry seeking a restoration of the subsidy to its original level.

* **Disaster Crop Insurance** — a problem area for all growers. Many areas of Australia experience damage from flood, hail, wind, fire, frost and drought. A comprehensive crop insurance scheme would be of benefit to all growers.

* **Funding Research and Extension** — over the past couple of years there have been cut backs in Federal Government funding of research and extension programmes. The Council is seeking to impress upon the Government the importance of research and extension to the horticultural industry.

* **The Problem of Imports** — the Council doesn't oppose imports of horticultural products as a matter of policy. Our resistance is to the importation of competing products at prices that cannot be met by Australian growers. The Council believes that Australian production should be optimised first before cheap imports are permitted to undercut the viability of our own growers.

These and other issues were the subjects of discussion by the Council's Executive Committee with members of the Government Parties Rural Committee and the Minister for Primary Industry, Mr. Nixon, in Canberra on March 31 this year.

Fresh Citrus Exports

JANUARY SUMMARY

AUSTRALIAN FRESH FRUIT EXPORTS BY STATES (Tonnes)

	QLD.	N.S.W.	VIC.*	S.A.	W.A.	TOTAL
Grapefruit	2.5	1.4	0.8	0.1	—	4.8
Lemons	2.9	1.1	0.5	2.8	15.9	23.2
Oranges	15.1	4.9	95.7	596.3	—	712.1
	20.5	7.4	97.0	599.3	15.9	740.1

* — Vic. includes N.S.W. Border Areas.

AUSTRALIAN FRESH FRUIT EXPORTS BY DESTINATION (Tonnes)

	Grapefruit	Lemons	Oranges	TOTAL
PNG & Solomon Islands	2.3	3.1	47.4	52.8
Pacific Islands	2.4	3.5	73.5	79.4
Indonesia	0.1	1.2	4.0	5.3
Singapore	—	14.8	339.2	354.0
Malaysia	—	0.6	248.0	248.6
	4.8	23.2	712.1	740.1

River Murray Commission Storages, Diversions and Water Supply

MARCH SUMMARY

STORAGES	Capacity Megalitres	Week ending 26-3-80 Megalitres
Hume Reservoir	3,038,000	1,081,000
Lake Victoria	680,000	268,000
Menindee Lakes	1,794,000	1,243,000

WATER FLOWING TO SOUTH AUSTRALIA

Week ending 26-3-80	40 000
Monthly entitlement for March	186,000
Total for March to 26-3-80	150,000
Total for February	193,000

WATER QUALITY

(Average quality for week — total dissolved solids in parts per million)

	28 - 3 - 79	26 - 3 - 80
Swan Hill	192	114
Euston	138	154
Red Cliffs	234	258
Merbein	303	332
Lock 9	286	360
Lake Victoria	277	312
Berri	425	420
Waikerie	526	522
Mannum	361	498
Murray Bridge	379	510

— (Extracts from River Murray Commission Reports).

AUSTRALIAN CITRUS NEWS

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With 8 models from 18.6 kW (25 HP) to 46.2 kW (62 HP)*



Cast front wheels on 4600, spark arrestor on 4600 and 6600. Roof and R.O.P.S. are not standard but are available at extra cost.



Front end and rear wheel weights are not standard but are available at extra cost.

Ford introduces to Australia two Japanese-built diesel models—the 18.6 kW (25 HP) 1700 and the 22.4 kW (30 HP) * 1900—specifically for the needs of the smaller tractor user. Both models have 12 speed transmission and 5400 rpm PTO, and both are available with optional (at extra cost) Front Wheel Drive.

Two small, multi-purpose tractors—each a combination of size, versatility and power to make them very adaptable to a wide variety of jobs on the smaller property and for general maintenance work.

The Ford light tractor range extends up to the 46.2 kW (62 HP) 4600 model designed to narrow the gap between light and medium class tractors. In between there are the 2600, 3600 and 4100 models—designed for those seeking low initial cost for tractors featuring draw bar, 3-point linkage and 2 lever hydraulic control.

With our wide range of light models you can choose the tractor that best suits your pocket, your production requirements and your profitability.

*Manufacturer's estimate.

LT2567



FORD TRACTORS.



Queensland to Host 2nd AUF Convention

Queensland is the host State for the second national convention of the Australian United Fresh Fruit and Vegetable Association.

The convention will be held in Brisbane from 26th to 30th May, 1980 and a large attendance of growers, fruit and vegetable wholesalers, retailers and representatives of the packaging and transport industries are expected to attend.

The theme of the 1980 convention will be "Fresh into the Eighties".

Arrangements have been made for each of the AUF Divisions; Production, Packaging and Handling, Transport and Storage, Retail and Wholesale, to have separate meetings for discussion on problems affecting each section of industry operations.

The Production Division meeting will include an address by Mr. Hugh Cope, President of the Australian Horticultural Growers Council.

A panel session focusing on the effects of the energy crisis on the production and marketing of fresh fruits and vegetables will be one of the highlights of the convention's main programme. Panel mem-

bers will be Rt. Hon. J. D. Anthony, Deputy Prime Minister and Minister for Trade and Resources; Mr. Robin Marrett, Director, Mobil Oil (Australia) Ltd.; and Dr. Andrew Stoeckel, Assistant Director, Bureau of Agricultural Economics.

The convention will be opened by the Governor of Queensland, Sir James Ramsay.

The guest speaker at the official convention luncheon on Thursday, May 29, will be Hon. J. Bjelke-Petersen, Premier of Queensland.

Growers or other persons interested in attending this important event in the Horticultural Calendar should contact A.U.F. at 127 Commercial Road, South Yarra, Victoria, 3141

Grapefruit Promotion Successful

The Citrus Management Company's recent grapefruit promotion has been a great success because it sold more of the produce of citrus growers and told the public about the goodness of grapefruit.

This is the view of the company's general manager, Mr. Rob Miller, of Mildura, who released details of the promotion campaign last month.

He said that after an extensive market research programme, full page advertisements were run during the grapefruit season in national women's magazines, highlighting the vitamin and fibre benefits of grapefruit.

It also contained a coupon reply section for further information and a recipe brochure.

Mr. Miller said the company's staff had been busy forwarding many hundreds of brochures to all parts of Australia as well as New Zealand, Fiji and Singapore.

"If our campaign helped just one person to stay healthier and trimmer longer, then we think it was money well spent", he said.

The six page colour brochure full of grapefruit facts and delicious ways to eat them, is available from the Citrus Management Company, 58 Pine Avenue, Mildura, Victoria 3500 for the price of an enclosed 22 cent stamp.

MARKETING OF FRUIT AND VEGETABLES IN PLASTIC RETURNABLE CONTAINERS

(Continued from page 5)

The 36-litre and 72-litre crates are compatible and the smaller crates can be stacked on top of the larger crates for transport to retailers' shops.

USING CRATES IN THE RETAIL SHOP

Plastic returnable crates are ideal for display and self service by the customer. The 36-litre and 72-litre crates are the same height and can be displayed alongside each other in the same fixtures.

The introduction of a standardized plastic returnable package system to retail shops will increase efficiency by reducing the labour required to unpack and display produce for retail sale. Plastic returnable crates of produce can be moved mechanically from the retailer's truck to the coolroom or direct to display areas. Rollers and modular display trolleys can be used to move plastic crates to display areas allowing rapid preparation for sale and ease of stock rotation.

SUMMARY

The introduction of one standard system of compatible returnable crates will benefit all sections of the fruit and vegetable industries.

To obtain maximum benefits the distribution system must be considered as a whole and not in isolated sections.

As energy costs rise the returnable crate will become increasingly competitive with disposable packages.

Packaging and handling costs can be further reduced by mechanization of filling with produce and mechanical handling of returnable crates throughout the distribution system.

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Store 307, Wholesale Fruit Market
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Phone: 68 2240

Telegraphic Address: DAVIS, Melbourne
Box 148D, G.P.O. Melbourne

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Telephones: 764 3933, 764 3680

The Committee of Direction of Fruit Marketing
Store 211-217, Market "C"
FLEMINGTON MARKETS N.S.W. 2129
Telephone: 764 3299
Telegrams: "Fruitrep", Sydney

N. & A. Fruit Distributors Pty. Ltd.
Stores 35, 36 and 37
"A" Market, Sydney Markets
FLEMINGTON, N.S.W. 2129
Telephone: 764 3622

Mitchell and Hall Pty. Ltd.
(inc. Walker and Wadell)
John Jenkins Pty. Ltd.
Stores 1-4, Market A, Flemington Markets 2129
Telephones: 764 3489, 764 3383

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★ Superb Service

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*These percentage savings introduced November 26 1978 refer to the Monday to Saturday 8 a.m. to 6 p.m. rates and may be subject to change without notice.



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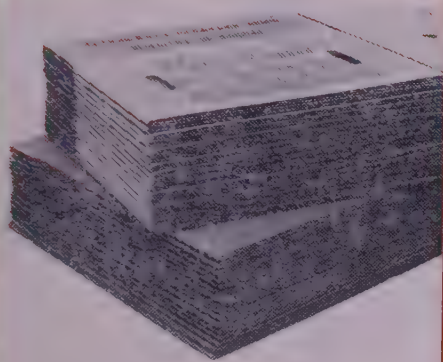
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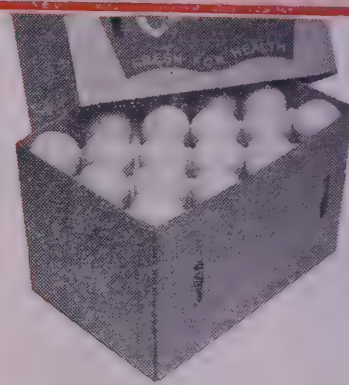
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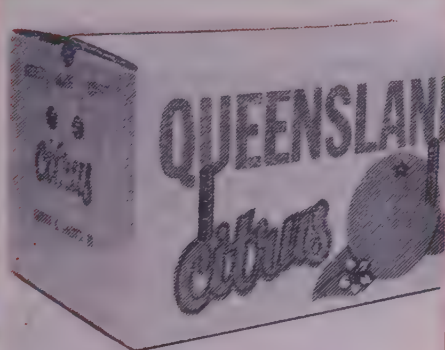
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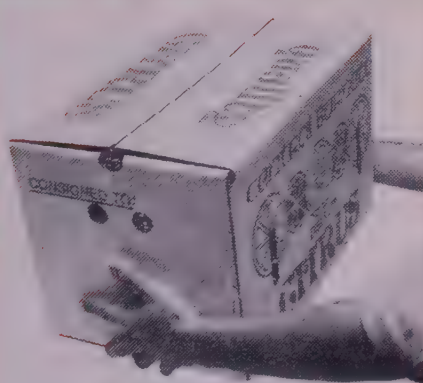
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EDITOR'S NOTE

Growers interested in the export of their citrus fruits in the 1980/81 season should learn all they can about the correct procedures for the harvesting and delivery of fruit to packing houses.

State Departments of Agriculture are organising schools and seminars to assist you so make sure you attend.

If you are going to export, the job has to be done 100 per cent correctly all the way, otherwise you are only wasting money putting the fruit on a ship.

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the official organ of
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INDUSTRY DOINGS

CORRECTION

In the February issue of A.C. News details were given in this column of the contributions by ACGF member organisations to the Citrus Dwarfing Research Project being sponsored by the NSW Department of Agriculture.

In respect to the South Australian contribution of \$1,200 it was recorded that the payment was a joint contribution by COC and MCGCA.

COC chairman, Perc Sanders, has advised that this contribution was made solely by COC and at no time was the matter discussed with MCGCA.

We are pleased to correct this error.

* * * *

ACGF WORKING COMMITTEE

Members of the ACGF Working Committee will meet in Sydney on Monday, June 2, to consider the case to be submitted to FISCC in respect to minimum factory prices for oranges and grapefruit in the 1980/81 season.

During the afternoon the committee will also hold discussions with the Executive Committee of the Australian Citrus Processors Association on FISCC matters.

The Working Committee will also consider matters arising from the annual conference including the items concerning research and promotion.

* * * *

NEW SECRETARY AT LEETON

Barry Helson has taken over the position of secretary of the Leeton Citrus Growers Association.

Previous secretary was John Darnley Naylor who has just retired as ACGF president.

Barry has been assistant secretary for a year or so learning the job.

* * * *

RIVERLAND CONFERENCE

ACGF secretary, Hugh Cope, will officially open the Annual Riverland Agricultural Bureaux Conference at Waikerie on Tuesday, June 3.

The theme of this year's conference will be "The Citrus Industry in the 1980s".

AHGC MEETINGS

The Executive Committee of the Australian Horticultural Growers Council will meet with senior officers of the Commonwealth Department of Primary Industry in Canberra on Wednesday, June 4, to discuss the need for a General Horticultural Panel to monitor imports of the sundry fruit and vegetable products and to recommend appropriate action to protect the Australian industry counterpart of those products.

The AHGC half yearly general meeting will be held in Sydney on Thursday, June 26.

* * * *

IRRIGATION SCHOOL AT YANCO

An Irrigation School for orchardists will be held at the Yanco Agricultural College, Yanco, NSW from Monday, June 30 to Friday, July 4, 1980.

Cost of the school is \$65 including accommodation and interested growers should contact the Dept. of Agriculture at Leeton (phone 069-533811) or the College

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A.C.G.F. PRESIDENT'S ANNUAL REPORT

The retiring President of the Australian Citrus Growers' Federation, Mr. John Darnley Naylor, of Leeton, N.S.W., presented the following report to the 32nd Annual Conference held at Alexandra Headlands, Queensland, on May 12-13, 1980:

THE YEAR UNDER REVIEW

In spite of persistent inflationary pressures and the resultant increases in our costs which always appear to be one step in front of the prices we receive, the growing sector has achieved a degree of stability which appeared beyond our grasp during the last decade.

The decision by the Federal Government to institute a variable tariff on imported orange juice concentrate has been clearly vindicated, and has proven to be the biggest single factor in reviving faith in the future and a recognition by growers that united, and with determination and hard work, they can affect their own destiny.

It is absolutely vital that every one of us recognises that there is no place for parochial attitudes in decision making if we are to survive within the framework of the Australian economy. Let no one imagine that we have done more than come through the initial skirmish in a continuing battle. The time will pass all too quickly before we are forced to face a second IAC Inquiry which, from our point of view, will certainly be no less hostile than the first. By 1982 we must be able to show that not only do we recognise that our structure is not static, but also that the degree of protection given us has in fact enabled the industry to operate more efficiently and to effect changes more rapidly.

There have been welcome indications this year that we are moving in the right direction. The establishment of the Australian Citrus Industry Council, and the re-establishment of the NSW Citrus Growers Council are two cases in point. We have shown energy and determination in accepting export opportunities, while the recent conference proved that we are not complacent in this highly competitive field.

None of these things happen without organisation and direction. I feel very strongly that ACGF is extremely fortunate in having Hugh Cope as our General Secretary. I know from personal experience the high reputation he has, not only with Federal and State Governments, but also in the other sectors of primary industry. His abilities have been recognised this year by his election as President of the Australian Horticultural Growers Council and he is also the Council's representative to the National Farmers Federation. These two avenues of communication are of the greatest value to ACGF.

One of the many time consuming and difficult tasks undertaken on our behalf, and certainly the most frustrating, is that of our representative on FISCC. He is in the infuriating position of never being able to satisfy everyone.

It has been one of my recurrent nightmares that Michael Keenan was unable to attend a meeting and that I had to take over as his proxy. We owe Michael a great debt for his unremitting efforts on our behalf. Details of the activities of the FISCC during the past year appear later in this report.

Mention must be made of the valuable

contribution which continues to be made to our statistical records and knowledge of our orchard economics by Fred Walpole. Fred has also put forward plans for research and promotion. These proposals have been considered by a special sub-committee and will be put before you during the Conference.

Adverse weather conditions in the Northern Hemisphere have continued to have an effect on the world citrus supply situation and this has created additional marketing opportunities for our fresh and processed citrus fruits.

Accordingly, Australia has experienced a strong orange processing market and has been able to increase its exports of fresh citrus to record levels and at satisfactory levels of return.

Unfortunately, increased packaging, marketing and transport costs, and other market factors have not enabled overall



Mr. J. D. Naylor

returns from the domestic fresh fruit market to, generally speaking, keep pace with other marketing outlets.

Of major concern to the Federation is the problem of inflation and the ability of citrus growers to obtain returns for their fruit commensurate with the increasing costs.

During the 1970s, when labour costs were the major factor, citrus growers were able to absorb some of the increases by labour saving devices and improved production techniques. As we enter the 1980s, with the cost emphasis on fuel, and the subsequent effect on transport and marketing costs, fertilizers and chemicals, the growers' ability to absorb these increases, or alternatively, to pass on the costs, are extremely limited.

It would appear important, if the cost of fuel is to continue to rise without adversely affecting the cost of food, that compensatory assistance will need to be provided to rural food producing industries.

THE 1979/80 SEASON PRODUCTION

Hot and dry conditions during the summer of 1979 contributed to fruit size problems with the 1979/80 season crops in many citrus growing areas. This was particularly noticeable with Valencias which had experienced a heavy fruit set.

Continued dry conditions throughout 1979 and early 1980 have further aggravated the situation, particularly in non-irrigated districts.

However, good spring rains in South Australia and parts of Victoria enabled the fruit size of Valencias to improve as the season progressed and resulted in a record crop of Valencias being harvested in South Australia and a larger than forecast crop in Victoria.

Total estimated production of citrus in the 1979/80 season again achieved a record level at 491.2 kilo tonnes, this being 7.6 per cent above the previous season's production.

The results were mainly due to the big Valencia crops in South Australia and a good Mandarin crop in Queensland.

Provisional estimates indicate that a record 399.4 kilo tonnes of oranges were harvested in the 1979/80 season, representing an increase of 37.8 kilo tonnes over the 1978/79 crop. The total orange crop comprised 133 kilo tonnes of Navel oranges, 262.8 kilo tonnes of Valencias and 3.6 kilo tonnes of other orange varieties. The previous highest Valencia crop was 227.2 kilo tonnes in 1977/78.

The lemon crop for 1979/80 has been estimated at 38.7 kilo tonnes, a reduction of 2.4 kilo tonnes from the 41.1 kilo tonnes produced in 1978/79.

Mandarin production increased slightly to 28.1 kilo tonnes due to an above average crop in Queensland.

Estimated production of grapefruit was 25 kilo tonnes, down slightly from the 26.5 kilo tonnes produced in the previous season.

CROP DISTRIBUTION

An estimated record 225 kilo tonnes of oranges have been delivered to factories during the 1979/80 season representing 56 per cent of the crop. This tonnage is 30 kilo tonnes (16 per cent) greater than the previous highest processed tonnage of oranges recorded in 1977/78.

Due to seasonal conditions, juice and solids yields are understood to have been lower than the previous season.

Factory deliveries of lemons have been estimated at 23.3 kilo tonnes, a reduction of 1.3 kilo tonnes from the estimated processed tonnage in the previous year.

The estimated factory intake of grapefruit was 16.5 kilo tonnes, 29 per cent above the estimated processing tonnage for 1978/79. Mandarin processing remained constant at 1 kilo tonne.

Total factory intake of citrus fruits in 1979/80 is estimated at 265.8 kilo tonnes.

During the 1979/80 season an estimated record 45 kilo tonnes of fresh citrus fruits were exported, representing 10 per cent of the crop.

Supplies to the domestic fresh market totalled 179.8 kilo tonnes, comprising 142.3 kilo tonnes of oranges, 19.4 kilo tonnes of mandarins, 10.5 kilo tonnes of lemons and 7.6 kilo tonnes of grapefruit.

The supplies of lemons and grapefruit to the domestic fresh fruit market both

(Continued on page 8)

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South Australia

In the renowned Riverland area near Berri, on the River Murray and regarded as one of the largest and best Citrus Orchards in Australia.

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A Commercial Packing licence issued by the Citrus Organisation Committee is held for all varieties of citrus. Brand names, market connections and will pass to the purchaser.

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"Solora" is an outstanding property, with long experience and expertise of management and has an excellent record of production, distribution and financial returns, particularly considering that only half the property is in significant production. It is expected that within the next few years production will more than double with only a very small increase in operating costs, thus making it an even more attractive business proposition.

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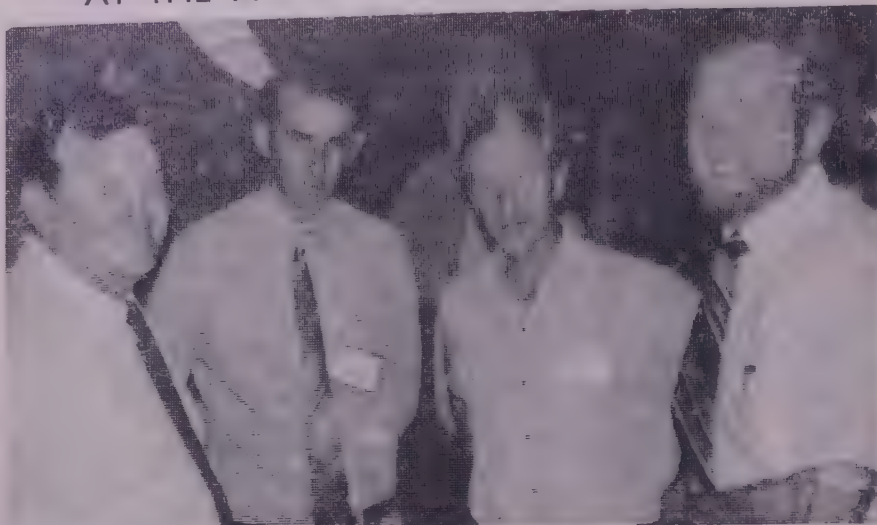
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THE CANDID CAMERA CAUGHT SOME OF THE DELEGATES DISCUSSING INDUSTRY MATTERS AT THE A.C.G.F. ANNUAL CONFERENCE



Left to right: Phil Mason (President, Leeton Citrus Growers Assn.), Barry Helson (Secretary, Leeton Citrus Growers Assn.), Ron Watson (President, Mid-Murray Citrus Growers Pty. Ltd.) and Peter Webster (Vice-president, Murray Citrus Growers Co-op. Assn.).



Left to right: Les Baker (Chairman, COD Citrus Sectional Group Committee), Andy Kyburz (Assistant Secretary, Dept. of Primary Industry and Chairman, FISCC), Bob Granger (Queensland Dept. of Primary Industries) and Geoff Shaw (COD Citrus Sectional Group Committee).



Rob Miller (Executive Officer, Citrus Management Co. Ltd., Mildura), Michael Keenan (Chairman, Murray Valley (NSW) Citrus Marketing Board) and Joe Pasin (Mirrool Citrus Growers Assn.).

NEW HEAD OF PRIMARY INDUSTRY DEPARTMENT

The Minister for Primary Industry, Mr. Peter Nixon, has announced the appointment of Mr. Lindsay Duthie as Secretary of the Department of Primary Industry.

Mr. Duthie, who has been Deputy Secretary of the Department of Trade and Resources since April 1976, joined the Public Service in 1951, in the then Department of Trade and Customs.

He has been closely involved in international negotiations in commodities, particularly agricultural products.

He was posted to Geneva between 1956 and 1959 to work in the GATT Secretariat, and from 1961 to 1963 to Brussels during the time of the British negotiations to join the EEC and the early stages of the formulation of the Common Agricultural Policy.

Mr. Duthie has led Australian officials on many trade delegations overseas, including the 1977 Sugar Conference, and the final rounds of the recently concluded MTN negotiations with the U.S. and Japan, which were particularly involved with assuring access for Australian beef exports.

Mr. Nixon said he was sure Mr. Duthie's appointment would be of benefit, not only to the Department, but to primary producers generally.

"Mr. Duthie's close involvement over many years with Australian agricultural commodity matters, particularly in relation to marketing and overseas trade policy issues, gives him an excellent background in primary industry".

Mr. Duthie, 47, was born in Wiluna, Western Australia, and is married with four children.

Mr. Duthie replaces Mr. D. H. McKay, who retired from the position earlier in the year due to ill health.

Mr. Nixon paid tribute to the excellent service Mr. McKay gave to the Department and to agriculture in Australia, and said it was regrettable that illness had forced him to retire early.

RECIPE OF THE MONTH

ORANGE CHICKEN MAGIC

- 4 Whole chicken legs (about 1 kg)
- 2 Tablespoons butter or margarine
- 1 Teaspoon fresh grated orange peel
- 1 Cup fresh squeezed orange juice
- 1 Cup chopped onion
- 1 Teaspoon salt
- 1 Teaspoon paprika
- 1 Teaspoon ground ginger
- 1 Teaspoon tarragon leaves, crushed
- 1 Orange, peeled, cut in cartwheels
- 1 Avocado, sliced (optional)
- 1 Tablespoons cornstarch

In skillet, brown chicken slowly in butter, about 15 minutes. Add peel, 1 cup orange juice, onion, salt, paprika, ginger and tarragon. Cover; cook over low heat 30 minutes or until tender. Remove chicken to serving dish. Arrange orange cartwheels and avocado slices over chicken; keep warm. Gradually blend remaining orange juice into cornstarch; stir into sauce. Cook, stirring constantly, until thickened. Serve over chicken. Makes 4 servings.

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*Manufacturer's estimate.

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FORD TRACTORS.



A.C.G.F. PRESIDENT'S ANNUAL REPORT

(Continued from page 4)

represent reductions from the levels of the previous year.

PROCESSED CITRUS PRODUCTS

Imports

Imports of citrus juices cleared for home consumption during the year ended June 30, 1979, amounted to 13.9 million litres. This represents a reduction of 30 per cent compared with the clearances recorded in 1977/78 and was 63 per cent below the clearances recorded for 1975/76.

The 1978/79 import clearances (with comparative 1977/78 figures in brackets) comprised 11.3 million litres of orange juice (5.6 m), 2 million litres of mandarin juice (12.1 m), 55,000 litres of lemon juice (34,000), 45,000 litres of grapefruit juice (428,000), 477,000 litres of lime juice (647,000) and 14,000 litres of other citrus juices compared with 926,000 litres in the previous year, which was mainly mandarin juice prior to separate statistics being provided on this variety.

Accurate statistics on import clearances of citrus juices in 1979/80 are not yet available due to problems which have occurred in respect to orange juice in the conversion of concentrate to total soluble solids for the purpose of applying the tariff and the further conversion to single strength litres for the purpose of the statistics.

However, information available on actual imports indicates that in the eight month period ending February 29, 1980 a total of 39.4 million litres of orange juice have been imported which exceeds the record year of 1975/76.

This increased level of imports of orange juice in 1979/80, in association with an estimated record processed tonnage of oranges, can be attributed to the continuing strong demand for orange juice on the Australian market, which has been further assisted by the development of the pasteurised juice packs and the introduction of the Tetra Brik packs mainly aimed at the teenage market.

The import factor is an important safety valve for the industry and, operating in the context of the variable tariff arrangement, plays its part in supplying the needs of the Australian market without upsetting the stability of the industry at all levels.

Because of the statistical problems referred to earlier, ACGF has submitted a request to the Federal Government that all imports of citrus juices be identified and documented as kilograms of total soluble solids and that the statistics relating to these imports be also recorded in this form. ACGF also presented evidence to support the IAC Inquiry into Tariff Simplification supporting this concept and recommending appropriate levels of tariff per kilogram of total soluble solids for lemon and grapefruit juice which would equate to the existing tariffs per litre of single strength juice.

The request to the Government has coincided with a review of the operation of the variable tariff arrangement which is currently being undertaken and which was fore-shadowed at the time of the Government's decision on assistance to the citrus industry.

During the year under review ACGF also made submissions to the IAC Inquiry into Chemical Products, and to the Government, in respect to the tariffs applicable

to imports of citrus oils.

Investigations revealed that major citrus producing countries such as Brazil, Mexico and Israel are classified under the Customs Tariff as developing countries, and in respect to citrus oils, they would have qualified for a lower rate of tariff than other countries under draft IAC proposals. The submissions requested that imports of orange and lemon oil from all countries, with the exception of New Zealand and Papua New Guinea, be subject to a general tariff rate of 15 per cent.

Exports

Exports of citrus juices in 1978/79 totalled 4.3 million litres, comprising 3.5 million litres of orange juice, 62,000 litres of lemon juice, 115,000 litres of grapefruit juice and 685,000 litres of other citrus juices.

For the eight month period ending February 29, 1980 exports have totalled 3 million litres compared with 1.9 million litres for the same period in 1978/79. The major increases during the eight month period are in grapefruit juice which rose from 34,000 litres to just under a million litres, and in lemon juice which rose from 29,000 litres to 255,000 litres.

Exports of citrus oils are being maintained at average levels of recent years, i.e. about 80 tonnes per annum.

Powdered Vitamin C Supplements

In conjunction with other sections of the industry, ACGF has taken action during the year to ensure that the manufacture and sale of vitamin C supplements, produced for consumption in a beverage form, are made subject to State food regulations rather than being registered as medicines, therapeutic substances or drugs.

Submissions were presented to Ministers of Health in the respective States and to the National Health and Medical Research Council.

The Federation has welcomed the passing of legislation in Victoria, giving the Minister of Health power to cancel or suspend the registration of a product under the Health (Proprietary Medicines) Act, and indications that the Minister has already acted to suspend the registration of the products under question as from July, 1981.

If these products are made subject to State Food Regulations, the labelling and identification of the product will enable the consumer to more accurately assess the contents and to avoid incorrectly identifying the products as citrus juices in a powdered form.

MARKETING — FACTORY

Fruit Industry Factory Committee

In determining minimum prices to apply to factory purchases of citrus fruits in the 1979/80 season, the Fruit Industry Sugar Concession Committee increased the price of Navel oranges by \$2 per tonne, Valencia by \$4 per tonne, Seville oranges by \$3 per tonne and left the prices for lemons and grapefruit unchanged.

The minimum price for grapefruit has remained unchanged since 1975/76.

The Federation presented submissions to the Committee seeking appropriate increases for all citrus varieties, bearing in mind increased costs of production, the marketing situation and, in the case of oranges, the effect of the variable tariff arrangements on the landed cost of imported juice.

The submission in respect to lemons sought the elimination of the price differential between metropolitan and country factories but the Committee maintained the differential arrangement for this and all other citrus varieties.

The decision to leave prices for lemons and grapefruit unchanged was received by growers with considerable disappointment.

Following on the announcement of FISCC minimum prices for Navel and Valencia oranges ACGF recommended to the State and Regional Statutory Citrus Authorities that the minimum prices be increased and the Boards responded favourably to the recommendations.

A strong demand by processors for fruit, in conjunction with a buoyant export fresh fruit market, resulted in prices for factory deliveries of Valencias rising considerably above the minimum levels set by the Boards. The effect of this favourable supply/demand situation was particularly noticeable in the River Murray areas, with slightly lower prices operating in the MIA Central Coast regions.

Although the growers have welcomed the increased monetary returns for factory fruit in the 1979/80 season, such factors created by temporary supply/demand situations are not necessarily seen as contributing to the long term stability of the industry.

The Federation again submitted a request to FISCC for minimum prices to be set for factory deliveries of mandarins but the Committee decided against any determination. In view of the current position in respect to imports of mandarin juice and the volume of mandarins being processed in Australia, it would seem appropriate not to pursue the matter of factory prices for the time being.

In conjunction with the price submissions for minimum factory prices in 1979/80 ACGF requested that the Prescribed Conditions be amended to provide for 60 per cent of the FISCC price to be paid not later than the end of the month following the month of delivery and the balance to be paid not later than three months after the month of delivery.

FISCC deferred a decision pending consideration of amended payment terms for deciduous fruits but in the absence of any agreement with processors on improved terms in the Prescribed Conditions, the Committee has left the arrangements for citrus fruits unchanged.

Fortunately, most growers of oranges have received their payments during the past season on terms more favourable than the conditions prescribed by FISCC, but this has not applied in the case of other growers and certainly not for lemons and grapefruit. ACGF will continue to work for some improvement in the terms of payment laid down by FISCC.

Sugar Agreement

Since our last Annual Conference the Commonwealth Government has announced details of a new Sugar Agreement between the Commonwealth and Queensland Governments to operate for the period ending June 30, 1984.

ACGF has welcomed the continued provision in the Agreement for the operations of the FISCC and was pleased to again submit the name of our own member, Michael Keenan, to the Minister for Primary Industry as a candidate for appointment to the Committee as the representa-

(Continued on page 12)

Mildura Citrus Grower Elected A.C.G.F. President

Mr. Harry Walker, of Mildura, has been elected President of the Australian Citrus Growers Federation for 1980/81.

His election took place at the 32nd Annual Conference of the Federation which has just been concluded at Alexandra Headlands, Queensland.

The retiring President, Mr. John Darnley Naylor, of Leeton, N.S.W., did not seek re-election after serving in that position for three years.

Mr. Walker is well known in citrus industry circles having been a Vice-President of ACGF for a number of years. He is a Director of the Sunraysia Districts Citrus Co-operative Society Limited and is a former chairman of the Murray Valley (NSW) Citrus Marketing Board.

Delegates attending the conference paid tribute to the outstanding service rendered to the industry by Mr. Naylor during his three years as president.

Mr. Bob Kemp, of Gosford, N.S.W., and Mr. Peter Nicholas, of Loxton North, S.A., were elected as vice-presidents.

Mr. Kemp is chairman of the Central Coast (NSW) Citrus Marketing Board and Mr. Nicholas is president of the Murray Citrus Growers Co-operative Association in South Australia.

Mr. Les Baker, M.B.E., of Gayndah, Queensland was elected as the fourth member of the Executive Committee.

The ACGF Annual Conference appointed the president, Mr. Walker; Messrs. Les Baker (Queensland); Peter Nicholas (MCGCA - S.A.); Fred Walpole (Central Coast - N.S.W.); Max Pettman (C.O.C. - S.A.); Rob Miller (Sunraysia); Ken Thompson (MIA - NSW); and Hugh Cope (General Secretary to the ACGF Working Committee, with provision for a representative of the Lemon Marketing Board of N.S.W. to also attend meetings of this committee.

The president, Mr. Walker, and Messrs. Baker and Naylor will continue as the Federation's delegates to the Australian Citrus Industry Council. Mr. Naylor is currently president of the Council and will continue in that position until the Annual Meeting in September.

The conference also appointed the president and the general secretary as delegates to the Australian Horticultural Growers Council.

The 1981 Annual Conference will be held in South Australia.

Highlights

Highlights of some of the matters discussed and decisions taken at the Conference are reported as follows —

Growers Defer Decision on Proposal to Establish Research Authority

The conference considered the following proposals submitted by a special ACGF Sub-Committee on citrus industry research:

- (1) That an interim Research Committee be established to allocate funds to urgently needed national citrus research projects;
- (2) That the funds required for any such projects be contributed by member organisations on a similar formula basis as that used for contributions to ACGF for administrative purposes;
- (3) That as Stage 2 of the proposals the Commonwealth Government be requested to establish a Statutory

Authority to be known as the Australian Citrus Research Committee for the purpose of collecting funds for industry research projects and allocating the funds to enable the projects to be undertaken.

The Stage 2 proposal envisaged the Committee comprising four ACGF representatives (three from grower organisations and one from Statutory Boards), one representative from CSIRO, one from the Australian Agricultural Council and one from the Department of Primary Industry. The funds would be collected at a rate per tonne each year from all citrus fruits produced in Australia and sold, on a



Mr. Harry Walker

similar basis to the levy collection system used in the apple and pear industry. It was also envisaged that funds provided by the Committee for research projects would be supported by the Commonwealth Government on a dollar for dollar basis.

The conference considered the proposals at length and whilst there was considerable agreement on the general concept, it was agreed that further information was required on the likely research projects which were to be undertaken and the levy collection arrangements, and accordingly the proposals were referred back to the ACGF Working Committee for further investigation.

Majority Support on Promotion Proposal

The conference, by a majority vote, supported in principle a proposal for a Commonwealth Statutory Authority to be established to collect funds from the industry and to carry out promotional activities on behalf of the industry on a national basis.

The proposal envisaged that the Authority would be known as the Australian Citrus Promotion Committee and would comprise three ACGF representatives (two from grower organisations and one from the Statutory Boards), one representative of the Australian Citrus Industry Council, and one representative of the Department

of Primary Industry.

Funds would be collected from all citrus fruits produced in Australia and sold.

Areas of activity included in the proposal were market and consumer research, consumer education, school project material and recipe material.

Queensland dissented from the decision.

The proposal will now be referred to the ACGF Working Committee for further investigation with a view to obtaining unanimous support from the industry.

Conference Support Fuel Policy for Horticulture

The Annual Conference agreed to support the development of a specific policy on fuel for horticulture so that guidelines could be established for negotiations with Government and other authorities in respect to the supply of fuel and energy to the horticultural industry.

The policy adopted provides for:

- (1) Security of supply so as to ensure that priorities are given, in a restricted fuel supply situation, to the food producing and distribution sectors of the economy.
- (2) The containment of the industry's fuel costs within manageable limits.

This policy has two distinct elements:

- (a) the direct cost of fuel for various production and distribution functions, and
- (b) the multiplier effect to the grower due to the increased cost of goods and services related to fuel costs, i.e., transport, plastics, fibreboard, fertilizers, chemicals and storage, etc.

A cut-off point needs to be established so that when fuel costs reach a certain pre-determined percentage of production and distribution costs, the Commonwealth Government should then take the necessary action to ensure that the horticultural industry is cushioned from further fuel cost increases in relation to the rest of the community.

- (3) Support and encouragement for the development of alternative fuel sources.
- (4) Support for continued research and development in those areas of fuel and energy usage that have the greatest application to the farm sector.

Imports

Information was presented to the conference indicating that a total of 39 million litres of imported orange juice had been cleared for home consumption in the nine month period ending 31 March, 1980.

This volume of juice was the equivalent of about 86 000 tonnes of oranges.

The conference noted the information with some concern and it was agreed that the matter should be raised with the Australian Citrus Industry Council with a view to obtaining the co-operation of other sections of the industry in closely monitoring the position in the future.

Grapefruit Research Project Approved

The conference agreed to confirm the arrangements for ACGF to continue sponsoring the Grapefruit Palatability Research Project for a further year.

Information provided to the conference

(Continued on page 11)

River Murray Commission Storages, Diversions and Water Supply

APRIL SUMMARY

STORAGES

	Capacity	Week ending 30-4-80
	Megalitres	Megalitres
Hume Reservoir	3,038,000	591,000
Lake Victoria	680,000	297,000
Menindee Lakes	1,794,000	1,149,000

WATER FLOWING TO SOUTH AUSTRALIA

Week ending 30-4-80	25,000
Monthly entitlement for April	135,000
Total for April to 30-4-80	135,000
Total for March	186,000

WATER QUALITY

(Average quality for week — total dissolved solids in parts per million)

	25 - 4 - 79	30 - 4 - 80
Swan Hill	188	112
Euston	190	153
Red Cliffs	271	241
Merbein	332	328
Lock 9	344	348
Lake Victoria	283	318
Berri	443	456
Waikerie	559	552
Mannum	439	498
Murray Bridge	413	522

— (Extracts from River Murray Commission Reports).

Brian Wild Returns from U.S.A.

Brian Wild, Senior Research Horticulturist with the NSW Department of Agriculture at the Gosford Horticultural Postharvest Laboratory, recently returned from the USA after successfully completing course work and research associated with the requirements of a PhD degree in Plant Pathology.

Brian studied at the University of California, Riverside which is approximately 100 kilometres east of Los Angeles. This University is renowned for its specialised research into problems associated with citrus production and marketing.

The Riverside area is also noted for the frequent smog episodes that result from polluted air blowing in from the Los Angeles area.

The studies undertaken by Brian covered many aspects of Plant Pathology. Some of these topics were Physiology of Plant Disease, Principles of Chemical Control of Plant Disease, Fungal Physiology, Mycology.

Brian's research programme at U.C.R. investigated aspects of resistance of citrus green mould and *Penicillium digitatum* to the fungicides used in Californian citrus packing houses to control it, namely: methyl (the benzimidazoles), sodium ortho thiabendazole, benomyl, thiophanate-methyl phenate (SOPP) and sec-butylamine (2AB). His research established a link between the concentrations of these fungicides required to prevent growth of resistant strains in culture and their tolerance to commercial fungicide treatments.

He also demonstrated that strains resistant to the benzimidazole fungicides were less competitive than the sensitive strains and that in untreated fruit, their frequency declined. However, he found that the strains were frequently double-resistant to either the benzimidazoles and SOPP or 2AB and that application of any of these fungicides favoured the selection and propagation of the double-resistant strain. For example a strain which was double-resistant to the benzimidazole fungicides and SOPP, which would normally be out-competed by a sensitive strain in a decaying untreated orange would be selected for by a treatment with either of the fungicides it was resistant to.

This finding will now result in a monitoring of citrus packing houses in California for the double-resistant strains which had not been detected before.

Fungicide regimes can then be selected which will permit free competition between resistant and sensitive strains and ultimately result in a decrease in their frequency in the packing house spore population.

Brian has returned to his position as Senior Research Horticulturist at the Gosford Horticultural Postharvest Laboratory and will continue his research on fungicide resistance problems in Australian horticulture. Together with this project he will continue investigations into the problems of postharvest handling of fruit and vegetables now being conducted at the Gosford laboratory.

Editor's Note: ACGF contributed \$750 toward's Brian's expenses while undertaking his studies in the USA. Congratulations Brian on your PhD.

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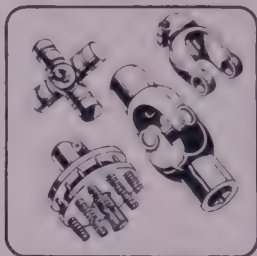
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Mildura Citrus Grower Elected A.C.G.F. President

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indicated that the total cost of the industry's share of the project in 1980/81 would be \$8,000 compared with \$6,500 the year before and that the Australian Citrus Processors Association had agreed to contribute \$1,000 towards the industry's half share of the total cost in 1980/81.

The conference noted the arrangements for the ACGF member organisations to again contribute \$6,500 on the following basis: COC (S.A.) \$2,500; CMC (Sunraysia/Mid Murray) \$2,500; MIA grower associations (Leeton/Mirrool) \$1,500.

During the conference Mr. David Andary, chairman of Berri Fruit Juices Co-operative Ltd., announced that his company would be pleased to contribute the remaining \$500 to complete the required industry contributions to the project.

Lemon Juice Research

The annual conference agreed to refer to the ACGF Working Committee for further investigation a proposal that research should be carried out into improving the palatability and consumer appeal of lemon juice products.

Rural Chemicals — The Climate

The conference expressed concern over the adverse publicity being given to the role of chemicals in the production of good quality foods.

It was agreed that action was needed to inform the community of the real position in respect to the proper use of chemicals in food production and the matter is to be taken up with the National Health and Medical Research Council in Canberra.

Affiliations and Donations

The conference agreed that ACGF should continue to financially support the Nuffield Farm Scholarship Scheme and should continue its affiliations with the Australian Horticultural Growers Council, the United Fresh Fruit and Vegetable Association and the International Society for Horticultural Science.

Conference Addresses

The conference was officially opened by Mr. Elton Burns, Director-General of Primary Industries in Queensland.

Mr. Burns was deputising for the Hon. V. B. Sullivan, Queensland Minister for Primary Industries, who had accepted an

invitation to perform the opening but was unable to attend due to Cabinet responsibilities in Brisbane.

Mr. Keith Jorgensen, Senior Horticulturist, Queensland Department of Primary Industries, addressed the conference on "Developments in Pest and Disease Control in Queensland" and Mr. Dan Smith, the Department's Senior Entomologist spoke on "Progress in Integrated Control of Citrus Pests in Queensland".

Mr. Fred Walpole, Manager/Secretary of the Central Coast (NSW) Citrus Marketing Board gave an address on "High Density Citrus Planting in Australia".

Delegates attended the conference from all citrus producing States of Australia

Fresh Citrus Exports

FEBRUARY SUMMARY

AUSTRALIAN FRESH FRUIT EXPORTS BY STATES (Tonnes)

	QLD.	N.S.W.	VIC.*	S.A.	W.A.	TOTAL
Grapefruit	.04	0.4	1.6	0.5	—	2.9
Lemons	4.0	2.3	0.6	2.3	3.8	13.0
Oranges	17.2	10.6	72.2	279.5	—	376.7
	21.6	13.3	74.4	279.5	3.8	392.6

* — Vic. includes N.S.W. Border Areas.

AUSTRALIAN FRESH FRUIT EXPORTS BY DESTINATION (Tonnes)

	Grapefruit	Lemons	Oranges	TOTAL
PNG & Solomon Islands	1.2	3.6	111.1	115.9
Pacific Islands	1.1	1.0	49.8	51.9
Singapore	—	3.7	77.6	81.3
Malaysia	—	0.1	131.4	131.5
Indonesia	0.1	0.8	4.0	4.9
Hong Kong	—	3.4	1.3	4.7
Antarctic	0.5	0.4	1.5	2.4
	2.9	13.0	376.7	392.6

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tative of growers of non-canning fruits.

ACGF has also welcomed the decision to reject the IAC recommendation that the domestic sugar rebate arrangements and the FISCC be preserved for a maximum period of two years and that a review of the assistance which should be accorded to the processed fruit industry be undertaken within that time. The decision retains these provisions and provides for the operation of the domestic rebate to be reviewed within the five year term of the Agreement rather than an automatic cessation at the end of two years.

FRESH FRUIT MARKETING — DOMESTIC MARKET

Due to a buoyant processing sector and an increased level of fresh fruit exports, the volume of citrus fruits going to the domestic fresh fruit market has declined during the past year with an estimated 37 per cent of the crop going to this market.

As I mentioned in my opening remarks there is concern in the industry regarding the rapidly increasing costs of marketing our fresh fruit and this matter will be discussed in more detail during the Conference.

Imports of fresh citrus fruits cleared for home consumption in the twelve months ended June 30, 1979 totalled 644 tonnes.

The clearances included 353 tonnes of grapefruit, 79 tonnes of lemons and 210 tonnes of mandarins.

For the six month period ending Dec

ember 31, 1979 the import clearances were 85 tonnes.

The Federation is unable to report any successes to date in achieving sales of citrus fruit in Australia by weight at the wholesale and retail levels. This matter will continue to be pursued.

Also prominent in our activities is the matter of grapefruit maturity standards and ACGF is following closely the work being carried out by the NSW Department of Agriculture aimed at developing appropriate minimum maturity standards for this variety.

The Federation is also monitoring progress of the workshop group set up under the Horticultural Committee of the Standing Committee on Agriculture to consider the following:

- (a) The need for greater uniformity of fruit and vegetable grade standards in Australia;
- (b) Alternative methods used for administration of grade standards in Australia and overseas;
- (c) Changes that may be appropriate in administering standards under Australian conditions.

FRESH FRUIT MARKETING — EXPORT

Exports of fresh citrus during 1979 reached a record level of 45 kilotonnes, an increase of 68 per cent over the 27 kilotonnes exported in 1978.

The 1979 exports comprised 31,493 tonnes of oranges, 4,919 tonnes of lemons, 7,736 tonnes of mandarins and 862 tonnes of grapefruit.

The fruit was shipped to 21 different markets, with New Zealand maintaining its position as our major individual export market, taking 22 per cent of total fresh citrus exports.

Shipments to South East Asia and the Pacific Islands were increased by 50 per cent to 18,230 tonnes and this market area took 40 per cent of the total exports.

Shipments to Europe and Scandinavia were increased by 140 per cent to 11,220 tonnes, this figure representing 25 per cent of the total.

The Middle East and Persian Gulf area took 3,600 tonnes, representing 8 per cent of the total and Canada 2,150 tonnes, the remaining 5 per cent.

The world market conditions for fresh citrus fruits, which enabled Australia to increase its share of the export market in 1979, provided a wonderful opportunity to further develop this important market outlet and at the same time contributed some \$17m. to the credit side of our nation's balance of payments.

With expectations that these basic world conditions will continue to apply in 1980, Australia has a further opportunity to establish itself in overseas markets.

To ensure that the industry is better informed on all aspects of the growing, packing and shipping of citrus fruits for export, ACGF convened an industry conference in Melbourne during March this year to discuss these matters. There has been an enthusiastic response to the results of the Conference and appropriate action is now proceeding at industry level.

The Federation continues to closely monitor progress in the achievement of entry for our citrus fruits into the important Japanese market. Further research work has been carried out in Australia during the year on all aspects of the fruit fly quarantine procedures, which were required by the Japanese Government, and the successful completion of this work should bring us one year nearer to achieving entry for our citrus fruits.

ACGF has participated in working group discussions convened by the Standards Association of Australia to determine performance specifications for corrugated fibre-board boxes used in the export of fresh citrus fruits. These discussions have been of a technical nature and we have been represented by Mr. Baker (Queensland), Mr. Burgess (NSW) and Mr. Duncan Beaton, General Manager of the Waikerie Co-operative Producers Ltd., representing South Australia. Draft standards are in the process of being developed.

RESEARCH

During the year the Federation has been heartened by the good progress made in the research project aimed at improving the palatability and consumer appeal of grapefruit juice.

The project is being carried out by Dr. Bruce Chandler of the CSIRO Food Research Laboratory at North Ryde and the results so far give excellent prospects for the development of a grapefruit juice in Australia with taste and flavour equal to anything that can be produced in the world.

ACGF has sponsored this project and industry funds totalling \$6,500 were provided by the Statutory Citrus Boards in South Australian and the Sunraysia Area

(Continued on page 14)

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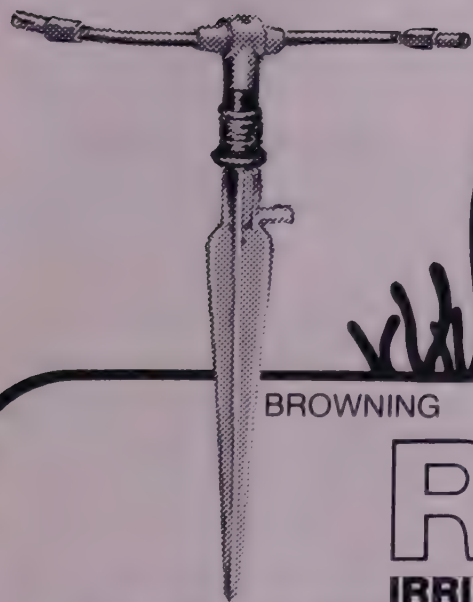
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and also the grower associations in Leeton and Mirrool. The Commonwealth Government provided a matching Special Research Grant to make up the total funds required for the project in 1979/80.

The Federation has agreed to again sponsor a continuation of the project for a further year and member organisations have agreed to contribute a further \$6,500 for the work in 1980/81. We also acknowledge the agreement by the Australian Citrus Processors Association to contribute \$1,000 towards the increased total costs of the project in this second and final year.

ACGF member organisations have also agreed to contribute \$3,000 towards the cost of a research project to establish the cause of citrus dwarfing.

The project is being sponsored by the NSW Department of Agriculture and will be conducted by eminent virologist, Dr. Mark Schwinghamer.

The research is expected to show whether dwarfing is related to exocortis, and if it poses a threat through mechanical or insect transmission, to our Mother

Tree Scheme or to existing plantings. Total contributions to the cost of the project are estimated at \$43,000.

The \$3,000 being provided by ACGF member organisations has come from COC \$1,200; Citrus Management Co. Ltd. \$800; Central Coast Citrus Marketing Board \$200; COD \$200; Leeton Citrus Growers Association \$300; and Mirrool Citrus Growers Association \$300.

The project will commence in June of this year and the results will be eagerly awaited.

PROMOTION

The year under review has seen the further development of the Good Nutrition Education Project by the Australian Council of Good Nutrition, of which ACGF is a contributing member.

Details of a "Good Food Friends" teaching aid kit have now been released to all primary schools in Australia. The kits are aimed at teaching young primary school children the importance of nutritional foods in their daily diet.

"Jolly Orange" is the character representing the citrus industry in the project and he is prominent in the project material.

The project has so far cost over \$100 000 and ACGF, through its Boards in NSW, Victoria and South Australia, and the Grower Associations at Leeton and Mirrool, has contributed \$5,000 towards the cost.

Early reports indicate that the response from schools has been excellent and ACGF will follow closely the progress of this long term promotional education project and the other activities of the Council in promoting nutritional foods.

PROSPECTS FOR 1980/81

Present indications are that the overall Australian citrus crop for the 1980/81 season will be lower than the record production of 1979/80.

The Navel orange crop is currently estimated to be 8 per cent above the previous season at 143.5 kilotonnes.

On the other hand the Valencia crop estimates are for a reduction of 42 kilotonnes, or 16 per cent.

Only minor variations are forecast for the other citrus varieties.

Total citrus crop estimates are for a production of 460.7 kilotonnes, a reduction of 30.4 kilotonnes (6 per cent) from the estimated record production of 1979/80.

Details of preliminary forecasts provided

by State Departments of Agriculture and ACGF member organisations for the 1980/81 season are as follows: (1979/80 estimated production in brackets)

	Tonnes	
Navel Oranges	143,530	(132,993)
Valencia Oranges	220,751	(262,789)
Other Oranges	2,989	(3,619)
Total Oranges	367,270	(399,401)
Mandarins	27,893	(28,122)
Lemons	40,260	(38,688)
Grapefruit	25,312	(24,981)
Total All Citrus	460,735	(491,192)

The outlook for the 1980/81 season looks promising for oranges and mandarins and improvements are also indicated in the marketing prospects for lemons and grapefruit.

With a continued strong demand likely for oranges for processing, it can be expected that an increased volume of Navel oranges will probably be taken by processing factories to offset the reduced Valencia crop and that import levels of orange juice will also be maintained at relatively high levels.

Prospects for fresh citrus exports again look promising and lemon growers in particular should endeavour to direct a maximum volume of suitable fruit to this market outlet.

On the domestic market there is still a need for the industry to more accurately assess the volume needs of each major market to ensure that the quality of the fruit and the volume of supplies going to each market are in line with the mar-

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A.C.G.F. PRESIDENT'S ANNUAL REPORT

(Continued from page 14)

ket's requirements.

Anything that can be done to improve this situation will assist the grower to obtain more realistic returns from the domestic fresh fruit market.

AUSTRALIAN CITRUS INDUSTRY COUNCIL (ACIC)

Of major importance during the year has been the formation of the Australian Citrus Industry Council to provide a forum for discussion and consideration on all matters affecting the industry.

The bringing together of representatives of growers, processors and that section of the industry involved in converting citrus juice concentrates to a single strength consumable product for distribution to the market, will enable the collation of more reliable industry statistics; the development of industry projects on market research and promotion; and will enable consideration to be given to the longer term prospects and trends of the industry.

I have the honour to have been elected as the inaugural President of the Council.

It is expected that the fresh fruit packing and marketing section of the industry will also be directly represented on the Council at an early stage.

AUSTRALIAN HORTICULTURAL GROWERS COUNCIL (AHGC)

The Federation has continued to play an active role in the affairs of the Australian Horticultural Growers Council.

Matters which have received attention during the year include:

- * Developments in trade between Australia and New Zealand.
- * Protection against unfair import competition for fresh and processed fruits and vegetables.
- * Development of a fuel and energy policy for Australian horticulture.
- * A request for the Nitrogen Subsidy to be increased to \$100 per tonne and to be available on imported as well as Australian produced nitrogenous fertilizers.
- * Depreciation allowances on Farm Water non-plant capital expenditure.
- * Disaster Crop Insurance for Horticultural Crops.
- * The attitude of the community to the use of chemicals.
- * The provision of Government funds for research and extension.
- * Exemptions for perishable produce from the effects of industrial action.
- * Plant quarantine.
- * The need for adequate funds to maintain control of fruit fly in commercial horticultural producing areas.
- * Uniform protection for growers of fruits and vegetables supplying produce to the respective State markets.
- * The issue of a bi-monthly newsletter to all horticultural producers.

The Council has continued to hold regular meetings with members of the Government Parties Rural Committee and the Horticultural Sub-Committee of the Rural Committee and these discussions have proved of considerable value.

The Council's Executive Committee also recently had a valuable meeting with the Minister for Primary Industry, Mr. Nixon.

AHGC has taken up associate membership with the National Farmers Federation (NFF) and is represented on that body by our General Secretary.

This Federation considers it important

that the Council should move towards full voting membership of NFF as soon as possible so that the views of horticultural producers on major economic issues, such as tariff protection policy for food producing industries, can be more effectively put to the national body representing Australian farmers.

AUSTRALIAN UNITED FRESH FRUIT AND VEGETABLE ASSOCIATION (AUF)

During the year the Federation joined the newly formed Australian United Fresh Fruit and Vegetable Association (AUF) and is taking an active interest in the development of this organisation.

The AUF objectives are to provide a national forum for all sections of the Australian fresh fruit and vegetable industry to promote policies that benefit the industry and to establish liaison and communication between growers, wholesalers, retailers, transport operators, other sectors of the industry, and also between the industry and the community.

"AUSTRALIAN CITRUS NEWS"

Circulation of the "Australian Citrus News" has been maintained throughout the year on a monthly basis to growers and other interested persons in Australia and overseas.

Subscriptions to the "Australian Citrus News" have again shown a further increase this year.

Advertising income has been increased by 55 per cent without any change in our advertising rates, and this valued support by our advertisers has been sincerely appreciated.

Our appreciation is conveyed to Mr. Russell Martin, our Advertising Consultant, for his contribution to the improved position and to the management and staff of The Murray Pioneer Pty. Ltd. at Renmark for the excellent job done by them in printing and distributing the magazine.

ACKNOWLEDGEMENTS

It is appropriate for the Federation to again express its sincere appreciation to the officers of the Department of Primary Industry, and other Commonwealth Departments and Authorities; to officers of the State Departments of Agriculture/Primary Industries; to Federal and State Members of Parliament and to the media, for the assistance and co-operation given throughout the year.

This Report would not be complete without a special word of thanks to the former Minister for Primary Industry, Mr. Ian Sinclair, who was of tremendous help to the Federation throughout the period of the TAA and IAC Inquiries into our industry and up to the time of his resignation.

We have already met with the new Minister, Mr. Nixon, and we look forward to a continuing and "fruitful" relationship with him on matters concerning the industry.

We also take the opportunity of expressing regret that ill health has forced the premature retirement of the Secretary of the Department of Primary Industry, Mr. Doug McKay, and we particularly thank him for the assistance given to ACGF during his period of office. We are happy to welcome Mr. Lindsay Duthie as the new Secretary and look forward to establishing the same close liaison with him.

I wish to thank the Executive Committee for their unfailing support and wise advice throughout the year.

Our congratulations go to our former President, Rex Andrew, on his award of the Medal of the Order of Australia which was announced in the 1980 Australia Day Honours List.

To our General Secretary and our Typist-Clerk, Mrs. Jean Turner, a special word of thanks for the part they play in the successful administration of the organisation.

Any voluntary organisation like ACGF and its member bodies continually face the difficulty of maintaining a balance in their leadership. To ensure the vital continuity on which we rely as a national body, experience and an intimate knowledge of the working of the industry must be replenished by delegates with fresh ideas who are prepared to accept the responsibilities of office. I am delighted that this is happening at local and State levels and I feel most strongly that these talents must be encouraged to provide our future leaders.

Thank you for the privilege of serving as your President for the past three years.

MAJOR CITRUS ORCHARD ON MARKET

One of Australia's largest single unit citrus orchards is being offered for private sale through Bennetts Farmers Ltd., Adelaide, under instructions from Solara South Pty. Ltd.

Known as "Solara", it is located in the heart of South Australia's Riverland, midway between Berri and Loxton.

It comprises 163 hectares of which 115 hectares have been planted to various varieties of citrus and irrigated from the River Murray.

Eventually 142 hectares can be planted and irrigated.

"Solara" is being offered as a going concern for \$1,850,000 plus the value of the crop on trees at the date of possession, currently estimated at \$265,000.

Price includes extensive working plant and vehicles and will also include brand names, nursery, market connections and processing and commercial packing licences.

Existing management and staff can be retained by arrangement.

Plantings commenced on "Solara" in 1960 and regular plantings have been made each year since, using sweet orange root stocks and buds from top quality parent trees.

The plantings programme has been based on diversification of citrus varieties to maximise viability and profitability.

A small team of men considered to be leaders in Australia's citrus industry have developed and managed the enterprise since its inception.

"Solara" is regarded as one of the best citrus properties in Australia and because much of it has yet to achieve full production, it offers opportunity for an increasing income, coupled with a significant capital gain potential.

The agents offering "Solara" for sale, Bennetts Farmers Ltd. of Adelaide, are able to supply further details.

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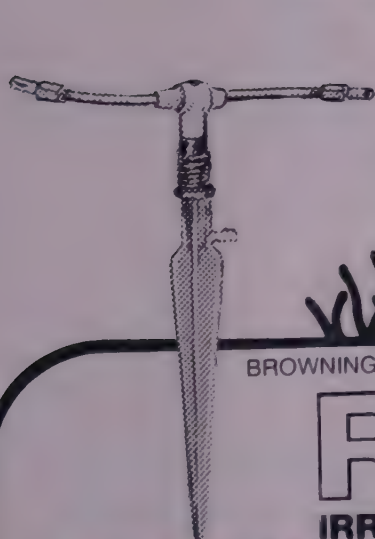
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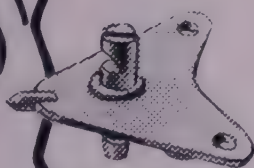
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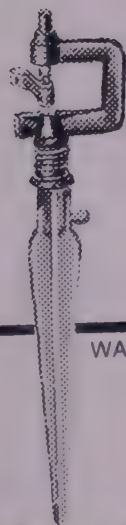
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THE AUSTRALIAN CITRUS NEWS

the official organ of
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INDUSTRY DOINGS

PAST PRESIDENT RECOVERING FROM ILLNESS

Immediate Past President of ACGF, John Darnley Naylor, is slowly recovering from a serious blood disease illness which has severely restricted his activities since April.

John carried out his duties at the ACGF Annual Conference under extreme hardship and only expected to receive the all-clear to return to his work on the orchard about mid-June.

We extend to John best wishes for a complete recovery from his illness.

* * * *

FOOTBALL STARS TO PROMOTE ORANGES

Two popular football stars will feature in a series of television commercials made to promote the "Murray River Country" oranges.

Stars of the commercials will be Leigh Matthews from the Melbourne VFL Club Hawthorn, and Graham Eadie from the Sydney Rugby League Club, Manly-Warringah.

The campaign has been organised by the Citrus Management Co. Ltd., at Mildura, and their Chief Executive, Rob Miller, says the 1980 navel promotion will be the largest ever undertaken by the Australian citrus industry.

* * * *

CITRUS EXPORT GROWERS AND PACKERS BACK AT SCHOOL

More than 130 growers and packers attended a recent school at Mildura on the export of citrus.

The school was organised jointly by the Victorian and NSW Departments of Agriculture and followed on the discussions at the Citrus Export Conference convened by ACGF and held in Melbourne during March.

Sessions at the school covered all aspects of the export operation from growing and harvesting the fruit to post harvest treatment, packing house and packing line hygiene, packaging, cool storage, export standards and regulations, outturn on world markets and future packing and handling trends.

The school was opened by ACGF General Secretary, Hugh Cope.

* * * *

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NEW PESTICIDES MANUAL

The Minister for Primary Industry, Mr. Nixon, has announced the release of a new publication, the Manual of Safe Practice in the Handling and Use of Pesticides.

The book is intended as a primary source of information on the proper and effective use of pest control chemicals.

The manual is available at a cost of \$7.20 over the counter from Australian Government Publishing Service Bookshops in all capital cities, or by mail at a cost of \$8.10 which includes postage from Mail Order Sales, A.G.P.S., P.O., Box 84, Canberra, ACT 2600.

* * * *

RIVERLAND GADGET AND FIELD DAYS

Entries are being sought for the gadget competition to be held as part of the 23rd Riverland Gadget and Field Days to be held at Loxton, S.A., on September 17 and 18, 1980.

Persons wishing to enter gadgets are asked to phone Mr. Gordon Thom on (085) 84 1448 or write to him at Loxton North, S.A. 5333.

* * * *

NEW PREMISES FOR BERRI PACKING HOUSE

The Berri Co-op. Packing Union has announced plans to build a new \$3m. citrus packing plant on the Sturt Highway at Berri, S.A.

The project will encompass 6.5 hectares of land and will provide for the installation of a newer, modern and more cost efficient citrus handling plant which would incorporate the most recent advances in that section of the industry.

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Proceedings of the 1978 International Society of Citriculture Congress

The printing of the proceedings of the 1978 International Society of Citriculture Congress is now nearing completion and copies are expected to be available shortly.

About half of the papers presented to the Congress held in Sydney were by Australian authors and so it is anticipated that many Australian citrus growers and other interested persons will be anxious to obtain a copy of the proceedings.

Copies are available from Dr. Peter Cary of the CSIRO Division of Irrigation Research at Griffith at a cost of \$25.00 per copy.

Those wishing to obtain copies should complete the order form included in this issue of the "Australian Citrus News".

Details of the proceedings are as follows:

WORLD CITRUS — PRESENT AND FUTURE PROSPECTS

World Citrus Production and Trade: Current Situation and Future Outlook, L. H. Myers and W. Grierson.

Citrus Industry of South America with Special Reference to Brazil, O. S. Passos and A. A. Salibe.

The Australian Citrus Industry, F. Walpole.

The Citrus Industry in New South Wales, J. H. Duncan.

QUALITY CONTROL OF FRUIT AND PRODUCTS

Quality Standards for Citrus Fruits, Juices and Beverages, W. Grierson and S. V. Ting.

Quality Changes in Maturing Oranges, B. V. Chandler and K. J. Nicol.

Can We Predict the Quality of Citrus Crops?, B. V. Chandler and K. J. Nicol.

Can We Quantify the Comparison of Citrus Crops?, B. V. Chandler and K. J. Nicol.

Quality Evaluation of Juice from "Mid-season" Oranges, K. J. Nicol and B. V. Chandler.

Chemical and Temperature Control of Rind Pigment of Citrus Fruits, B. M. El-Zeftawi.

Plastid Ultra-structure in Relation to Rind Pigments and Re-greening of Valencia Oranges, B. M. El-Zeftawi and R. G. Garrett.

Roots as a Probable Site for Citrus Limonoid Biosynthesis, K. J. Nicol and B. V. Chandler.

Removal of Limonin from Bitter Navel Orange Juice, R. L. Johnson and B. V. Chandler.

Estudio Comparativo de Dos Híbridos del Género Citrus, Tangor Ortanique y Temple, V. Alonso.

TAXONOMY, BREEDING AND GENETICS

Citrus Breeding, Taxonomy and the Species Problem, A. Vardi and P. Spiegel-Roy.

Percentage of Triploid Offspring of Cross-Pollinated Diploid Polyembryonic Citrus, G. Geraci.

Pollen Tube Penetration into Citrus Styles, G. Geraci, R. Reforgiato and F. De Pasquale.

Recent Studies about Flavonoids of Citrus with Special Application to Chemotaxonomy, O. Carpena Artes and J. J. Mataix Beneyto.

CULTURAL AND ENVIRONMENTAL FACTORS

Climate and Citrus Behaviour (abstract only), W. Reutner.

Citrus Root Systems: Their Structure, Function, Growth and Relationship to Tree Performance, W. S. Castle.

Influence of Rootstocks and Time of Pick-Young Citrus Shoot Homogenates, F. Lenz on Browning and Coagulation of G. Crescimanno and G. Geraci.

Photosynthesis and Respiration of Citrus as Dependent Upon Fruit Load, F. Lenz.

The Potential of a Man-Made Fog to Improve Citrus Fruiting in Inland Areas, A. H. Finch.

Flavonoids in Flowers of Citrus Limon cv. Eureka, F. Tomas, O. Carpena Artes, R. Pastor and J. J. Mataix Beneyto.

Factors Affecting Growth, Yield and Fruit Composition of Washington Navel and Late Valencia Orange Trees, P. R. Cary and P. G. J. Weerts.

HARVESTING AND MARKETING

Mechanical Harvesting and Handling of Citrus Fruits, G. E. Coppock.

Air Shakers for the Removal of Oranges in Florida, J. D. Whitney.

Mechanized Harvesting of Citrus in Italy, G. Blandini, F. Petrone, G. Raciti, A. Scuderi and S. Sisinna.

Machines for Harvesting Citrus Fruit, G. A. Brown and R. J. Hutton.

The Citrus Mechanical Harvesting System Being Developed at Mildura, Victoria, Australia, I. R. Thornton, B. M. El-Zeftawi and I. V. Gould.

Mechanical Aids for Citrus Harvesting, P. G. Davey and P. Lahiff.

Effects of Mechanical Shake-Removal on Citrus Fruit Quality, B. M. El-Zeftawi, I. R. Thornton and I. V. Gould.

Delaying Deterioration of Individual Citrus Fruit by Seal-Packaging in Film of High Density Polyethylene, S. Ben-Yehoshua.

Citrus Fruit Sorting — Parameters Influencing Manual Work Rate, A. Lidror, Y. Roll and S. Siv.

ROOTSTOCKS AND NURSERY PRACTICE

Selection of Rootstocks for Salinity and Disease Resistance, D. A. Newcomy.

Forecasting Rootstock-Scion Incompatibility in Citrus, K. B. Bevington, W. J. Greenhalgh and K. S. McWhirter.

The Influence of Rootstock on the Performance of Ellendale Tangor, K. B. Bevington and J. H. Duncan.

Rootstock Trials for Lemons in New South Wales, J. W. Turpin, J. E. Cox and J. H. Duncan.

Propagation and Growing Citrus Nursery Trees in Containers, P. W. Moore.

Propagation of Citrus for Future Plantings, G. I. Moss.

Tissue Culture Propagation of Citrus Trees, R. Raj Bhansali and H. C. Arya.

Sources of Variability in Sour Orange Seed Germination and Seedling Growth, J. E. Fucik.

Research on the Micro-Grafting Technology in Citrus, N. Tusa, F. De Pasquale and L. Radogna.

The Use of Plasto-Chemicals in Transplanting Bare-Rooted Citrus Seedlings, T. A. Nasr.

CONTROL OF PESTS

Biological Control of Citrus Scale Pests, I. W. McLaren.

Biological Aspects of Co-Existence Between *Comperiella bifasciata* Howard (Hymenoptera: Chalcidoidea Encyrtidae) and *Aphytis* spp. Howard (Hymenoptera: Chalcidoidea: Aphelinidae) N. L. Richardson.

Some Biological Control Successes in the Southern United States, W. G. Hart.

Biological Control of Citrus Mites in New South Wales, G. A. G. Beattie.

Chemical Control of Citrus Pests, G. E. Carman.

Pesticide Application Methods for Citrus in Florida, J. D. Whitney, R. F. Brooks and R. C. Bullock.

Remote Sensing in Horticulture, W. G. Hart.

Phytotoxicity and Scalicide Efficacy of Citrus Spray Oils, G. A. G. Beattie and L. E. Rippon.

Relative Susceptibilities of Different Species/Varieties of Citrus to Leaf-Miner, *Phyllocnistis citrella* Stainton, S. P. Singh and N. S. Rao.

DISEASES AND THEIR CONTROL

Recognition and Control of Citrus Virus Diseases in Australia, L. R. Fraser.

Strains of *Exocortis* and Gummy Pitting: Symptoms in *Poncirus trifoliata* and Citrus spp., L. R. Fraser and P. Broadbent.

Rejuvenation and Virus Elimination of Old Citrus Clones, G. S. Bredell, J. H. Grobler and P. J. Muller.

Telespectroradiometer Study of Citrus Trees (Reflectance of Young Tree Decline — Affected and Healthy Citrus Tree Canopies Using a Mobile Telespectroradiometer Data System), G. H. Edwards, T. A. Wheaton, T. Davis and C. H. Blazquez.

Greasy Spot of Citrus, C. R. Wellings and R. W. Emmett.

Factors in Early Testing for Citrus Mal secco Resistance, N. Luisi, V. De Cicco, G. Cutuli and M. Salerno.

Epidemiology and Control of Citrus Scab in Florida, J. O. Whiteside.

Epidemiology and Control of Citrus Blast, V. De Cicco, N. Luisi and M. Salerno.

Disorders of Ellendale Tangor and Hickson Mandarin, P. Broadbent, L. R. Fraser and R. F. Fry.

SOIL MANAGEMENT AND HERBICIDE USE

Benefits and Problems of Herbicide Use in Citriculture, L. S. Jordan.

Effect of Soil Types and Rootstocks on Root Distribution and Leaf Composition of Citrus Trees, E. H. Mikhail and B. M. El-Zeftawi.

Citrus Response to Soil Profile Drainage, Deep Tillage and Liming, D. V. Calvert, H. W. Ford, E. H. Steward and F. G. Martin.

Soil Management in Citrus Orchards in South Australia, R. R. Cant.

Effects of Soil Management on Soil Temperatures in an Orange Orchard, P. G. J. Weerts and P. R. Cary.

IRRIGATION, DRAINAGE AND SALINITY

The Prospects of Water Management for

(Continued on page 8)

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FW2568



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Report on the 1977-79 ACGF Economic Survey of the Australian Citrus Growing Industry

By FRED WALPOLE, Secretary Manager, Central Coast (NSW) Citrus Marketing Board

First, a few comments on the preparation of these surveys.

1. The basic data is supplied by 42 growers, a panel which has basically been constant since 1974.

2. The basic data supplied in the individual returns is consolidated and averaged to produce the statistics relating to the average Australian or Regional orchard business.

3. The survey does not produce a profit and loss statement for the business, it simply provides a Cash Flow Study of the operation ending up with a Net Cash Residue which is certainly not a Net Profit figure.

Cash Costs of Production are those monies actually expended by the grower in the survey period and the Net Returns are those monies received after all marketing costs have been deducted.

4. Excluded from the Costs Section are many payment to or drawings by the owner/partner's depreciation and taxation.

5. The study relates to the whole orchard business including production of and returns from other fruits produced.

6. I believe that the consistency of the panel membership and the data supplied, supplies the Industry with an invaluable

and accurate guide as to trends particularly in percentages of movement.

In order to quickly summarise the Survey I have prepared the following table relating to the per acre figures of the two survey periods 1976-78 and 1977-79

	SURVEY PERIODS		% INCREASE
	1977 - 79	1976 - 78	1976 - 78 to 1977 - 79
1. Production per acre	10.25 t	9.34 t	9.7 %
2. Cash Costs of Production/acre	\$694	\$546	27 %
3. Net Returns per acre	\$1106	\$868	27.4 %
	(Citrus \$104/t)	(Citrus \$92/t)	
4. Net Cash Residue per acre	\$411	\$323	27 %

The disturbing feature of these figures is that for the first time in four surveys covering the period 1974-79 the percentage increase in Cash Costs of Production has been greater than the National CPI Index of inflation.

Fortunately the increases in production per acre or in net returns per tonne of production have combined to counter the increase and produce a very healthy Residue, the figure which I believe is the increase of 27 per cent in the Net Cash industry's index of increasing or decreasing viability.

EXPLANATION OF SECTION HEADINGS IN CCOP

(see table below)

Cash Costs of Production

Horticultural	Fertilizers, sprays and herbicide materials.
Labour	Employed labour plus Workers Compensation Insurance.
Energy	Fuel, oil, electricity, and plant repairs and water charges.
Overhead	Phone, accountant, rates, insurances (relating to orchard), business motor vehicle costs, bank charges, loan repayments, cash spent on improvements (not loan money), maintenance of improvements.

ACGF 1977-79 Economic Survey — The Average Australian Citrus Orchard based on

Averaged over the 1977-78 & 1978-79 Financial Years with figures for 19

	Average 1977 - 78 & 1978 - 79				Average 1976 - 77 & 1977 - 78			
	Total	Per Acre	Per Tonne	% of Sub-Section Total	Total	Per Acre	Per Tonne	% of Sec To
1. GENERAL STATISTICS								
Full time working partners	1.61				1.61			
Total Planted Area (acres)	54.92				52.79			
Total Planted Citrus Area (acres)	51.74				49.52			
Number Citrus Trees	6622	128			6388	129		
Number Citrus Trees N/B	1282	(20.5%)			977	(15.3%)		
Number Citrus Trees over 35	1143	(18.3%)			945	(14.8%)		
2. PRODUCTION (TONNES)								
Navels	154				134			
Valencias and Commons	276				227			
Grapefruit	44				39			
Lemons	45				41			
Mandarins and other citrus	9				7			
Total Citrus	528	10.21		95%	448	9.04		9
Other Fruits	35	11.01		5%	45	13.6		
Total Orchard	553	10.25		100%	493	9.34		10
3. CASH COSTS OF PRODUCTION (\$)								
Horticultural	5365	97.69	9.53	14%	4371	82.80	8.86	1
Employed Labour	15668	285.29	27.82	41%	11824	223.98	23.98	4
Plant - Power - Irrigation	7328	133.42	13.01	19%	5491	104.02	11.14	1
Overhead	9771	177.91	17.35	26%	7117	134.82	14.44	2
Total CCOP	38132	694.31	67.71	100%	28803	545.62	58.42	10
4. NET GROWER GATE RETURNS (\$)								
From Citrus	54759	1058	103.68	90%	41093	830	91.73	9
Total Orchard	60722	1106	107.82		45836	868	92.97	
5. RECONCILIATION (\$)								
Net G/G Returns	60722				45836			
Less CCOP	38132				28803			
Net Cash Residue	22590	411	40.85		17033	323	34.55	
NCR per Partner	14031				10579			

Citrus Imports Discussed at Special Search Conference

A special "Search Conference" was held at Renmark, S.A., during May to consider long-term factors likely to affect the future viability of the Australian citrus industry.

The conference was organised by growers in the Sunraysia district and officers of the NSW and Victorian Departments of Agriculture.

As well as the 45 growers from Sunraysia, the vice-president of the Murray Citrus Growers Co-operative Association, Mr. P. Webster, grower member of S.A. Citrus Organisation Committee, Mr. Bill Egge, and the general manager of Riv-Sam, Mr. J. Henwood, took part.

A representative from the S.A. Department of Agriculture, Mr. Trevor Twigdon, acted as an observer.

By utilising group discussion, the convener, Mr. Fred Emery, of the Australian National University, guided the discussion to cover about 30 different issues concerned with problems of the citrus industry.

Commenting on the results of the conference, Mr. Webster said that the main concern of the conference members was to set up a standing committee to monitor

imports and to prepare for protection against low cost imports.

It was necessary to ensure open lines of communication, to prepare a case to support protection.

This expires in 1982.

Other areas of concern raised at the conference were the improvement of grower relationships at the board level and better communication especially amongst ethnic groups.

Discussion topics included the need to evaluate consumer trends in the citrus industry and to continue lobbying for the continued quality and quantity of water to irrigated areas.

The conference considered that with increased consumption, this could lead to salinity problems in future years.

The benefits of the conference would be made available to Riverland growers through publication of the findings.

The grape industry has also expressed interest in a similar conference.

Mr. Webster said that the local representatives' presence at the conference had helped to understand each other's situation and had increased communication between the two areas.

IMPORT STATISTICS IN SOLUBLE SOLIDS

The Australian Citrus Growers Federation has been advised by the Federal Treasurer, Mr. John Howard, that as from July 1, 1980 the unit of quantity for imports of orange juice for customs administrative and statistical purposes will be kilograms of Total Soluble Solids.

The decision follows on a number of approaches which have been made to the Minister for Business and Consumer Affairs and the Australian Bureau of Statistics by ACGF and other sections of the industry, requesting that imports of orange juice be identified, documented and recorded as kilograms of Total Soluble Solids, so as to avoid the problems created by converting concentrates to Total Soluble Solids for the purpose of calculating the duty, and then to single strength litres for the purpose of the statistics.

The actual statistics for import clearances of orange juice in the 1979/80 financial year are still subject to verification and there are reservations concerning the accuracy of the figures relating to juice value and import duty paid.

While the decision announced by the Treasurer will have no bearing on the 1979/80 figures it is expected to go a long way to removing, as from the 1980/81 year, many of the anomalies which have caused the confusion in the statistics this year.

It is to be hoped that the decision will provide for all imports of orange juice to be documented and identified as kilograms of Total Soluble Solids by the exporting country so that no conversion factors are necessary when the product arrives in Australia.

The Federation has also requested that similar arrangements to those applying to orange juice as from July 1, 1980 be implemented for imports of other citrus juices. This would involve an adjustment of the present specific rates of tariff applying to these other citrus juices to a rate per kilogram of Total Soluble Solids and this matter is still under consideration at Government level and in the IAC Inquiry into Tariff Simplification.

m 42 Australian (excluding Queensland) citrus growers

Surveys for comparison

Average 1974 - 75 & 1975 - 76			1977 - 78 to 1977 - 79 1974 - 76 to 1977 - 79 Percentage Movements of Chief Items			
Per Acre	Per Tonne	% of Sub-Section Total	Per Acre (+)	Per Tonne (+)	Per Acre (+)	Per Tonne (+)
122 (13.8%)						
8.66 12.27 8.89		91% 9% 100%	12.9%		17.9%	
70.22 175.65 91.37 126.67 463.91	7.90 19.75 10.27 14.25 52.17	15% 39% 19% 27% 100%	18% 27% 28% 32% 27%	8% 16% 17% 20% 16%	39% 62% 46% 40% 50%	21% 41% 27% 22% 28%
677 698	79.19 78.46	91%	27% 27%	13% 26%	56% 58%	33% 37%
234	26.29		27%	18%	76%	55%

RECIPE OF THE MONTH GRAPEFRUIT SUNSHINE PIE

Cruchy oats crust: 1 cup quick cooking oatmeal; 1/2 cup flaked coconut; 1/3 cup firmly packed brown sugar; 1/2 cup melted margarine.

Heat oatmeal in shallow pan in 350° (F) oven 10 mins., stirring occasionally. Combine with remaining ingredients, mixing until crumbly. Press onto bottom & sides of 9" pie pan or square pan.

Fruit preparation: 2 large grapefruit, peeled and sectioned (or halve grapefruit and remove pulp with grapefruit spoon or knife); 1 cup coarsely chopped maraschino cherries. Drain grapefruit well.

Filling: 1 envelope plain gelatin; 1 pkt. (3 1/2 oz.) instant coconut cream pudding; 1 1/2 cups milk; two 2 oz. pkts. powdered dessert topping mix; 1 1/2 cups milk; 1 cup milk.

Stir plain gelatin into pudding mix. Add 1 1/2 cups milk and beat 2 mins. In another bowl beat powdered topping mix and one cup milk according to package directions. Fold half of whipped topping into pudding with drained fruit. Spoon into chilled crust. Spread with remaining topping. Decorate with grapefruit sections and cherries. Chill thoroughly.

Proceedings of the 1978 International Society of Citriculture Congress

(Continued from page 4)

- Optimum Citrus Growth and Production, H. Bielorai.
Salinity Management in Citrus, M. Boaz.
Developments in Undertree Irrigation Systems in the Murray Valley, G. H. Simpson.
Trickle Irrigation of Young Citrus on Coarse Sands, J. Slack, J. W. Turpin, J. H. Duncan and O. L. McKay.
Effect of Water Availability on Irrigation Schedules used by Citrus Growers, M. R. Till and P. J. Cole.
Water Quality and Irrigation Design, M. F. Pietsch.
Citrus Trickle Irrigation Trials, A. Scuderi and G. Raciti.
Citrus Seed Germination as Influenced by Water Potential and Salinity, R. G. Mobayen and F. L. Miltnorpe.

CROP REGULATION

- Understanding of Plant Processes as a Basis for Successful Growth Regulation in Citrus, S. P. Monselise.
Effects of Various Abscission Chemicals on Fruit Loosening of Citrus, B. M. El-Zeftawi.
Abscission Chemicals for Late Valencia Oranges in the Murrumbidgee Irrigation Areas of New South Wales, R. J. Hutton.
The Influence of Rootstock on the Res-

ponse of Valencia Orange Trees to Applied Growth-Regulators, G. I. Moss and K. B. Bevington.

Use of Growth Regulators in the Control of Cropping of Mandarin Varieties, S. Iwahori.

IZAA (5-chloroindazol-8-acetic acid ethyl ester) as a New Thinning Agent of Satsuma Mandarin (C. unshiu Marc.), K. Hirose, I. Iwagaki and K. Suzuki.

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Thinning Imperial Mandarins with Ethephon Increased Fruit Size and Grower Returns, P. T. Gallasch.

NUTRITION

Effects of Fertilization of Citrus on Fruit Quality and Ground Water Nitrate-Pollution Potential, T. W. Embleton, W. W. Jones, C. Pallares and R. G. Platt.

Rate and Timing of Nitrogen Application to Navel Oranges; Effects on Yield and Fruit Quality, W. V. Mungomery, K. R. Jorgensen and J. A. Barnes.

The Effect of Phosphorus and Vesicular-Arbuscular Mycorrhizal Development on Growth of Citrus in a Sandmount Series Soil, R. G. Weir, D. B. Letham,

P. Broadbent and P. J. Nicholls.

The Effect of Phosphorus on Fruit Quality Leaf Analysis and Yield of Valencia Oranges, R. G. Weir, K. B. Bevington, J. H. Duncan and F. W. Craddock.

Diagnosis of the Nutritive Status of Citrus, O. Carpena Artes.

The Citrus Leaf and Soil Analysis System in Queensland, K. R. Jorgensen and G. H. Price.

Analysis of Orange Juice for Mineral Content as a Diagnostic Aid to Fertilizer Practice with Special Reference to Fruit Juice Quality, G. I. Moss and M. L. Higgins.

The Biuret Content of Urea for Foliar Application to Citrus, J. B. Robinson.
Relationships Between N, K, and Fe and Different Ca Forms in Lemon Tree Leaves, O. Carpena Artes, A. Leon, S. Llorente and C. De La Pena.

CONTROL OF TREE SIZE, SHAPE AND DENSITY

Citrus Tree Size Control; Adapting Hedging, Topping and Pruning Practices to Various Orchard Designs and Tree Spacings, J. E. Fucik.

Effect of Time of Hedging on Shoot Growth and Flowering in Citrus, P. E. Bacon and K. B. Bevington.

Commercial Application of Virus Induced Dwarfing, J. H. Duncan, R. S. Sproule and K. B. Bevington.

Citrus Tree Spacing and Size Control, R. L. Phillips.

Growth of Woody Frame of the Grapefruit Tree (Citrus paradisi Macf.), F. M. Turrell, R. H. Young, S. W. Austin and M. J. Garber.

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New Technology in Citrus Management, J. E. Pehrson.

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A Summary of the 1978 Meeting of ISC Through a Grower's Eyes, I. S. Tolley.

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Picking Lemons for Export

By L. A. SCOTT, District Horticulturist, Gosford

To make maximum use of available quality fruit for export, growers must handle their product with the utmost care.

There are a number of important practices which have to be carried out to ensure that the fruit reaches the packing shed in the best possible condition prior to packing for export.

1. Don't, under any circumstances, pick wet fruit.
2. Preferably use soft cotton gloves to pick.
3. When picked, fruit should be handled with care — like eggs.
4. Don't leave full bins of fruit out in the sun for extended periods.
5. Ensure that fruit picked one day is dipped in an approved fungicide that same day.
6. Cleanliness assists in mould control.

PICKING WET FRUIT

The picking of wet fruit, which is very turgid, results in the breakdown of oil cells, both during the actual picking and subsequent handling in the picking bag and bulk bin. Although this damage is not readily apparent it causes aleoelosis which, following dipping, waxing and packing, shows up as serious blemishes.

Growers should wait until the dew has dried on the fruit before picking. Try and programme your work schedule to allow for the late start.

USE OF GLOVES

The use of soft cotton gloves by pickers protects the fruit from some of the rough handling. They also aid in covering up rough fingernails which damage the skin. Long or rough fingernails are taboo when picking for export.

FRUIT HANDLING

Although lemons don't really look like eggs they should be handled just as care-

fully. Their skin is tender and bruises easily, so make sure that they are not squashed in the picking bags or if buckets are used they are not dropped into the bottom. When emptying fruit into the bulk bin don't do so from the top of the sides. Lean over and allow the fruit to gently run out the bottom of the bag.

Bulk bins should be checked for any sharp edges, broken boards, protruding bolts or nails which can damage the fruit. Don't leave long stalks on fruit.

HANDLING OF BINS

When bins are full they should never be left in the sun. This causes damage to the top layers of fruit which subsequently are rejected in the packing line. If possible it is wise to cover the exposed bins with a hessian cover.

PROMPT DIPPING

One of the most important factors in the control of post-harvest rots is the prompt dipping of fruit after picking.

For export fruit it is essential to have the fruit bulk dipped within 24 hours of harvest to prevent the development of post-harvest rots.

Growers should endeavour to have all fruit picked and dipped the same day.

CLEANLINESS

If at all possible, bins should be promptly cleaned of any mouldy fruit and sterilized with an approved sterilant. Picking bags can also be cleaned and sterilized occasionally to assist in mould control.

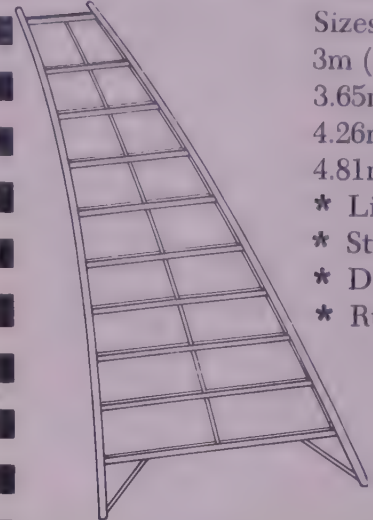
It is important that the grower and the picker do their utmost to ensure that the fruit picked for export arrives at the packing shed in the best quality condition.

The packing shed staff cannot produce a top line packout unless they receive a top line grade of fruit to begin with.

Co-operation all along the line will aid in producing a top quality product for export.

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River Murray Commission Storages, Diversions and Water Supply

MAY SUMMARY

STORAGES	Capacity	Week ending
	Megalitres	28-5-80 Megalitres
Hume Reservoir	3,038,000	659,000
Lake Victoria	680,000	469,000
Menindee Lakes	1,794,000	1,142,000

WATER FLOWING TO SOUTH AUSTRALIA

Week ending 28-5-80	21,000
Monthly entitlement for May	93,000
Total for May to 28-5-80	103,000
Total for April	135,000

WATER QUALITY

(Average quality for week — total dissolved solids in parts per million)

	30-5-79	28-5-80
Swan Hill	116	210
Euston	116	208
Red Cliffs	194	254
Merbein	191	283
Lock 9	226	204
Lake Victoria	262	300
Berri	254	504
Waikerie	324	588
Mannum	436	576
Murray Bridge	479	534

— (Extracts from River Murray Commission Reports).

AUSTRALIAN CITRUS NEWS

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Successful AUF Convention in Brisbane

A national programme to standardise packaging for fresh fruit and vegetables and the release of Australia's first training manual on handling and storing these products were just two highlights of the second national convention of the Australian United Fresh Fruit and Vegetable Association held in Queensland during May. (Details of these matters will be given in future issues of the Australian Citrus News).

The four-day convention brought up to 500 people to Brisbane to hear twenty speakers including Deputy Prime Minister, Mr. Doug Anthony, the Governor of Queensland, Sir James Ramsay, and State Premier, Mr. Bjelke Petersen.

President of the Australian Horticultural Growers' Council, Mr. Hugh Cope, called on the Federal Government to guarantee supplies of fuel in the event of shortages and to contain fuel costs in the fruit and vegetable industry.

However, Mr. Anthony ruled out the possibility of a fuel subsidy scheme for primary producers, commenting that "primary producers weren't the only sector of the community to suffer" as a result of the Government's fuel pricing policy.

He called on farmers to put their customary uses of fuel products under searching scrutiny to make sure every litre of petroleum was used most efficiently.

Queensland Premier Mr. Bjelke Petersen said members of the Association should seek a solution for fluctuating wholesale prices and returns to fruit and vegetable growers.

"While this is not an easy problem to solve, market prices for fruit and vegetables can vary from \$5 to \$16 overnight and there would be no national fruit and vegetable industry without the producer", he said.

Officially opening the convention, the Governor of Queensland, Sir James Ramsay, said the fruit and vegetable industry faced anomalies and problems which could only be solved by a unified voice.

He predicted that the Australian United Fresh Fruit and Vegetable Association would become one of the most influential and respected industry associations in the country, provided the apathy and selfishness of some sectors of the industry were

overcome by members working together.

Chairman of the production division of the Association and a prominent vegetable grower, Mr. Don Kidd, launched a scathing attack on "organically grown" fruit and vegetables, describing them as "rubbish" compared with fruit and vegetables grown by commercial producers using modern methods.

"If Australian consumers had to depend on this so-called organically grown produce for food, we would soon face extreme shortages", said Mr. Kidd.

He predicted starvation would be the next step if the use of insecticides was avoided.

"Australia is a great food producing country, thanks to modern insecticides. These insecticides are registered by the State and Federal governments before use and then only after the National Health and Medical Research Council and the World Health Organisation have satisfied themselves that these chemicals are safe, both to the user and the consumer", said Mr. Kidd.

Described by organisers as "enormously successful", the second national convention of the association closed with the election of Victorian vegetable grower, Mr. Les Allen, as President for the coming year.

Mr. Allen takes over from Mr. Tony English, General Manager of C.O.D., and inaugural President of the association.

He becomes a life member of Australian United Fresh, together with Mr. Ron Kefford, Deputy Director-General of the Victorian Department of Agriculture. Mr. Allen is a third generation vegetable grower from Dandenong on Melbourne's outskirts.

Following his election, Mr. Allen said he was hopeful that the fruit and vegetable industry would find sufficient funds this year to promote its products nationally.

He also called for uniform grade standards in all States for the marketing of fresh fruit and vegetables.

Chairman of the C.O.D. Executive, Mr. Don Kidd, was re-elected Chairman of the production division of the association, while Mr. Gordon Balstrup of the Australian Fibre Box Industry heads the packaging/handling division.

Chairman of the Sydney Farm Produce Market Authority, Mr. Stan Beal, was elected Chairman of the wholesale division and Mr. Arch Matheson from Woolworths Ltd., heads the retail division for the second year.

Mr. Paddy Flower, of Frigmobile Pty. Ltd., is also Chairman of the transport/storage division of the association for a second term.

AUF is looking for grower members. Annual fee is \$20 for private members (up to 10 permanent employees) and \$100 for corporate members (more than 10 permanent employees). Enquiries to AUF, 127 Commercial Road, South Yarra, Vic. 3121.

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Fresh Citrus Exports

MARCH SUMMARY

AUSTRALIAN FRESH FRUIT EXPORTS BY STATES (Tonnes)

	QLD.	N.S.W.	VIC.*	S.A.	W.A.	TOTAL
Grapefruit	0.9	6.3	1.1			8.3
Lemons	4.5	1.9	0.2	1.4	16.7	24.7
Mandarins	0.5	0.5				1.0
Oranges	6.8	26.7	86.1	86.8		206.4
	12.7	35.4	87.4	88.2	16.7	240.4

* — Vic. includes N.S.W. Border Areas.

AUSTRALIAN FRESH FRUIT EXPORTS BY DESTINATION (Tonnes)

	Grapefruit	Lemons	Mandarins	Oranges	Total
PNG & Solomon Islands	1.8	2.6	0.9	65.1	70.4
Pacific Islands	3.6	1.1	0.1	129.8	134.6
Indonesia	0.1	0.7		4.1	4.9
Singapore		17.0		4.3	21.3
Malaysia		0.5			0.5
Philippines	0.5	2.5		1.1	4.1
Hong Kong				2.0	2.0
U.A.E.	2.1	0.3			2.4
Bahrain	0.2				0.2
	8.3	24.7	1.0	206.4	240.4

METHODS OF CURING LEMONS

By Dr. B. L. WILD, Senior Research Horticulturist, N.S.W. Department
of Agriculture, Horticultural Postharvest Laboratory, Gosford

Particular interest has been generated lately into methods of lemon storage or "curing" used by the Californian citrus industry.

The Californian lemon industry export to many countries and their product arrives in a uniform yellow condition, with sound green buttons. This contrasts with Australian lemons which in the past have been marketed in a silver green condition. Since preference is now being shown by importers for lemons "like the Californian ones", we must now look at ways of supplying a product that meets the buyers requirements.

One method of producing uniformly yellow fruit is to store or "cure" lemons for various periods until the green pigment (chlorophyll) in the peel has been lost. Curing lemons is synonymous with "shrinking", "sweating" or "fining" down of lemons and not only has the advantage of producing more uniformly coloured fruit but also reduces the thickness of the rind, increases juice yield and also makes the fruit less susceptible to the accidental rupture of oil glands. This released oil causes rind burn ('oleocellosis') and provides an avenue for infection by green and blue mould.

In California lemons are harvested according to size and juice yield, not colour. This means fruit arrive at the packinghouse in a mixture of colours from dark green to yellow. All these fruit are then washed on revolving brushes and treated with a fungicide, suitable for preventing

decay for periods of up to 4 months. A storage wax treatment is then applied which also contains 500 ppm 2, 4-D. The wax reduces weight loss and the 2, 4-D keeps button green which prevents the development of 'Alternaria' rots.

Fruit are then colour sorted by machines using a light reflectance system to detect differences in chlorophyll (green colour) content. These colour-sorted fruit are then placed in storage rooms and held for varying periods depending on the market demands and original fruit colour.

Storage rooms are held at between 10 to 15°C, with relative humidities of 80 to 90 per cent. Particular attention is paid to providing continuous ventilation so carbon dioxide and ethylene concentrations do not build up. This process, however, is becoming increasingly expensive because of the high costs of electricity used for running the refrigeration plants.

After storage, the lemons are dumped onto conveyor belts and mouldy and damaged fruit removed. The remaining fruit are then washed, treated with a fungicide and waxed with a high gloss wax which often contains the fungicides thiabendazole at 3500 ppm, and/or SOPP at 1 per cent. These fruit are then dried and packed and marketed in the normal manner except that cartons are normally "vibra" filled as the fruit are electronically counted into the boxes.

The Californian storage process has many advantages. It gives the market sta-

bility by supplying fruit as demand requires, it produces a uniformly coloured fruit which is slightly soft and not easily damaged by mechanical handling. It however involves large capital expenditure for the construction of cool rooms, large power costs, involves extra handling equipment (colour sorters, box stackers, etc) and high risks of large losses due to mould and rot breakdown. A further problem of mould resistance to fungicides is also aggravated because the storage of treated fruit allows for the selection and proliferation of resistant strains, this increasing the risk of wastage during marketing.

Despite these problems, the Californian system works and provides the consumer with a uniform product, at a reasonably stabilised price.

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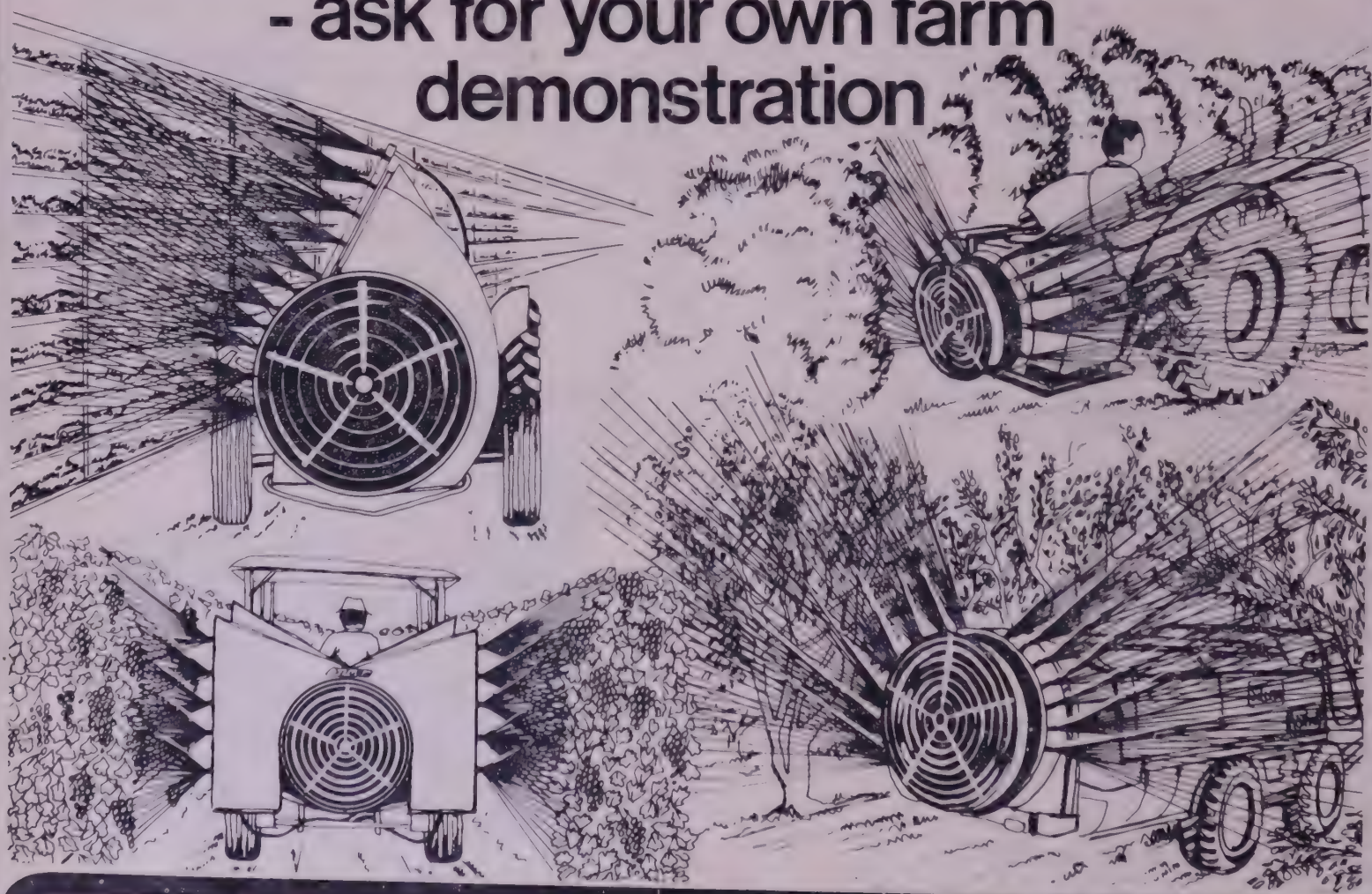


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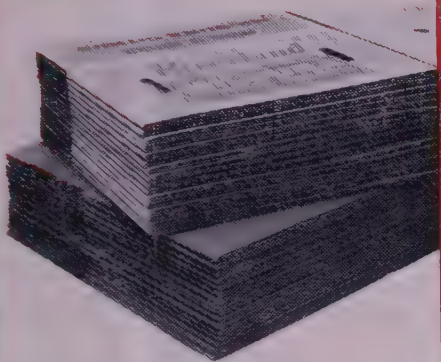
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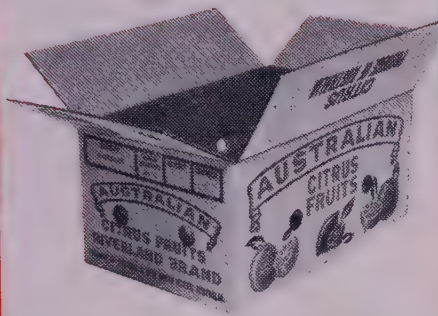
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EDITOR'S NOTE

The successful orderly marketing of citrus fruits on the Australian market depends on having a minimum number of sellers and a maximum number of buyers; regulating the supply of fruit to meet the market's needs; ensuring a high level of quality; ensuring a reasonable return to the grower at the same time as providing good value for money to the consumer; and effective promotion.

(Continued on page 3)

FISCC Minimum Prices for Oranges Increased - No Change for Grapefruit

The minimum prices determined by the Fruit Industry Sugar Concession Committee for the purposes of the relevant sections of the Sugar Agreement 1979, have been declared for factory purchases of oranges and grapefruit of the 1980/81 season.

Navel oranges have been increased by \$7 per tonne, Valencia oranges by \$8 per

tonne, Seville oranges by \$6 per tonne and no change has been made in the price of grapefruit.

Under the terms of the Sugar Agreement not less than the undermentioned prices must be paid for the fresh fruit in question which is used to make fruit products, if domestic or export sugar rebate is claimed.

FISCC of the prices at the conclusion of their meeting held in Griffith on 24 June, the President of the Australian Citrus Growers Federation, Mr. Harry Walker, said that citrus growers would be disappointed with the minimum prices.

He said that while it was expected the actual prices paid by processors for Navel and Valencia oranges would exceed the levels determined by the FISCC, it had been hoped the FISCC minimum prices for these fruits would have been set closer to the actual processing market prices.

Mr. Walker also said there would be considerable disappointment that no increase had been granted on grapefruit as the same price had now existed since 1975/76.

An ACGF deputation comprising Mr. Walker, Mr. Peter Nicholas (South Australia), Mr. John Darnley Naylor (Leeton), Mr. Fred Walpole (Gosford) and ACGF General Secretary, Mr. Hugh Cope, had met with the FISCC for an hour and a half and had presented a strong case for increased minimum prices to be set for all citrus fruits.

The growers had requested the FISCC to increase the minimum price for Navel oranges by \$13 per tonne to \$89 per tonne (Country factory); Valencias by \$15 to \$105 per tonne (Country factory); Grapefruit by \$12 to \$90; Seville oranges by \$15 to \$105 and had again asked for prices to be set for factory purchases of mandarins.

A deputation of citrus processors also attended the FISCC meeting.

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	Capital City (Metropolitan)	81 to 201 km (inclusive) from nearest Capital City	Over 201 km from nearest Capital City
	per tonne	per tonne	per tonne
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Sweet Oranges	\$106	\$102	\$98
Navel Oranges	\$91	\$87	\$83
Grapefruit	\$86	\$82	\$78

Delivered to factory located at—

	Capital City (Metropolitan)	Country
	per tonne	per tonne
Seville Oranges	\$104	\$96

The above prices apply to navel oranges and grapefruit delivered to processors in the period 1 May 1980 to 30 April 1981, both inclusive, and to Seville oranges and Valencia and other seed type sweet oranges delivered to processors in the period 1 June 1980 to 31 May 1981, both inclusive.

The minimum quality standard to apply to all oranges processed for juice will be

on the basis of a minimum soluble solids content of 38 kilograms per tonne of fruit.

MANDARINS

The Committee again gave careful consideration to proposals to declare minimum prices for mandarins but decided against any determination for the 1980/81 season.

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INDUSTRY DOINGS

APPOINTMENTS TO VICTORIAN CITRUS FRUIT MARKETING BOARD

The Victorian Minister of Agriculture, Mr. Ian Smith, has announced the appointment of Mr. Alec Fisher of Narrung, Victoria, as Chairman of the Victorian Citrus Fruit Marketing Board for 1980-81. Deputy Chairman will be Bill Foreman of Merbein.

A new member of the Board for the period 1-7-80 to 30-6-83 will be the General Manager of Oliveholme at Robinvale, Mr. Phillip Henry. Mr. Henry replaces Mr. Ron Vine.

Other members of the Board are Mr. Charles Humphry, of Murrabit, Mr. Lindsay Cozens (Victorian Dept. of Agriculture) and Mr. Peter Byrne, a Mildura Solicitor.

* * * * * FURTHER DETAILS OF ACGF ECONOMIC SURVEY

Following on the publication of the report on the ACGF Economic Survey in the June issue of "Australian Citrus News" we are this month printing a break-up of the figures on a State basis so that growers can more accurately compare their own figures with the Survey results. Look for this on Page 6.

* * * * * RECORD CITRUS SHIPMENT

Australia's largest individual consignment of citrus for export has been shipped from Queensland during July.

The shipment, totalling more than 7 million Ellendale mandarins, is bound for Saudi Arabia and Scandinavia.

The fruit was produced by 12 growers on orchards located in the Central Burnett district of Queensland.

* * * * * DEATH OF BILL BETTENAY

The Citrus Industry has been shocked to learn of the sudden death of Bill Bettenay in Melbourne on 21 June.

Bill was the Chief Fruit Officer (Exports) of the Commonwealth Department of Primary Industry and in that capacity worked closely with the industry in regard to the Export Regulations and other matters concerning our valuable export trade.

During his career he attended many of the ACGF Annual Conferences and was well known to many of our growers.

In March of this year he officially opened the special ACGF Export Conference held in Melbourne.

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His passing is a great loss to the Australian fruit industry. The Federation has conveyed the sympathy of the citrus growers of Australia to his widow and family.

Mr. Cec Flynn has been appointed Acting Chief Fruit Officer (Exports) as from 23 June, 1980.

* * * * * NEW DIRECTOR GENERAL FOR NSW

Mr. George Knowles has been appointed Director General of Agriculture in the NSW Department of Agriculture.

Mr. Knowles, 52, has taken over the position from Mr. Roy Watts following his retirement.

Mr. Knowles has been the Commissioner and Departmental head of the Soil Conservation Service since 1974.

* * * * * ACIC STATISTICS SUB-COMMITTEE TO MEET

Members of the Statistics Sub-Committee of the Australian Citrus Industry Council will meet in Sydney on August to review the statistics available to the citrus industry and to consider ways of improving the collection of this information.

The Sub-Committee comprises Mr. John Darnley Naylor, the Council's President; Mr. Michael Lucey, representing the Australian Citrus Processors Association; Mr. David Wade, President of the Australia Fruit Juice Association; and Mr. Hugh Cope, the ACIC Secretary.

EDITOR'S NOTE

(Continued from front page)

With the 1980 Navel season at its peak in the Southern States it's a good time to think about these matters and ask ourselves whether these objectives are being pursued.

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Back to School for Export Citrus Growers and Packers

By RALPH CADMAN, Victorian Department of Agriculture and CHRIS McINTOSH, NSW Department of Agriculture

It was back to school for 110 Sunraysia export citrus growers and packers on 20th and 21st May of this year. The 'back to' was organized by the Victorian and NSW Department of Agriculture for those growers and packers who actively participate in citrus export. The two day school was a chance to catch up on the latest export, picking and packing recommendations as well as to examine the reasons why export out-turns of citrus from this area have been so poor over the last few years.

This article briefly spells out some of the main recommendations made at the school which should help to greatly improve the out-turn of future export shipments of citrus.

FROM THE ORCHARD TO THE PACKING SHED

The success of any export programme invariably commences with the quality of the raw material — the Citrus Fruit.

Export fruit must be of the highest quality to withstand a 9 week voyage around the world and to achieve this standard, the grower must be very selective in choosing a patch of trees capable of producing the desired quality. Quality can also be achieved by choosing the correct annual tree management programme; however, because most growers are past this stage and are just commencing to harvest for export, this article will concentrate on the harvesting and handling aspects of the recommendations.

Getting the fruit from the tree to the packing shed is the most critical stage in the life of export citrus fruits. It is during this period that fruit can be subjected to its worst treatment; early breakdown in storage or transit can in most cases be attributed to some form of rind damage, allowing mould infection to take place.

RIND DAMAGE

Rind damage can occur during the fruit's life on the tree or during harvest and handling. It appears as cuts, button tearing and puncture marks in the skin due to severe physical injury or as superficial rind damage caused by a combination of environmental and harvest injury factors.

Once damage occurs, mould infection will take place within 24 hours in warm humid weather and within 48-72 hours during winter months. The main mould breakdown problems are in the cooler autumn, winter and spring months.

Naturally occurring environmental damage such as wind rub, hail and frost damage is much harder to avoid; however oleocellosis damage at harvest is avoidable. Oleocellosis mainly occurs in cold wet conditions during winter, which are associated with excessive surface moisture on citrus rind caused by rain, fog and dews. These conditions cause the skin of the citrus to become tight and turgid; slight surface pressure from fingers will cause the rupture of oil cells and oil staining.

This damage will often go unnoticed until after packing. Fruit on the southern sides and around the skirts of trees are usually more susceptible to oleocellosis damage, because these areas remain wet for longer during the day.

WAYS TO AVOID HARVEST DAMAGE

- Before commencing to harvest export citrus, instruct picking teams on export harvest requirements. Also regularly supervise them to make sure they continue to do the right thing.
- Regularly repair and maintain all bulk bins.
- Provide and insist that pickers wear soft cotton gloves at all times to avoid finger nail damage to fruit.
- Pick only into picking bags not buckets.
- Areas of the property that may have been subjected to frost damage should not be picked for export.
- Discard fruit obviously damaged by wind rub or hail.
- Never pick wet turgid fruit; wait until fruit dries out.
- Pick the southern sides and skirts of trees in the afternoons and only if fruit is dry.
- Clip Ellendale mandarins.
- When emptying picking bags into empty bins, lower the bag to the bin: don't drop the fruit from a height.
- Do not overfill bulk bins.

BULK DIPPING

It is unavoidable that some fruit will be damaged during harvest; for this reason both damaged fruit should be treated and sound fruit protected in a fungicide bulk dip. Because fungicides are effective only during certain growth stages of the mould fungus an early fungicide treatment is important.

For this reason the Department of Primary Industry recommend that all fruit must be bulk dipped within 24 hours of picking, in either Panocrine* (guazatine) or Topsin* (thiophenate-methyl) or S.O.P.P. (sodium ortho-phenyl phenate).

Growers picking for export should not pick on weekends, because fruit cannot be bulk dipped within 24 hours; the only exception being if growers were prepared to bulk dip fruit themselves.

SUMMARY

Export citrus growers can be assured that they will have played their part in getting their fruit to the shed in the best condition possible; if they have taken all precautions possible to avoid unnecessary rind damage and by making sure that their fruit is delivered to the packing shed within 24 hours of picking.

EXPORT GUIDELINES FOR PACKERS

These are the key areas for handling and packing export citrus and are the areas which are most likely to be the cause of poor export outturns.

1. Assembly of Fruit

This is likely to be a problem for some sheds where fruit is drawn from a large number of small growers, because it must receive a fungicide treatment within 24 hours of harvest. Therefore sheds should not export fruit which has been Saturday picked or delayed because of transport delays, unless the fruit has been dipped on the farm.

2 Bulk Dipping

If export fruit cannot receive in-line fungicide treatment on arrival at the shed it must be bulk dipped in one of the approved fungicides for 30 seconds. Panocrine* is excellent for this job as it controls Blue and Green Mould and Sour Rot. When using a bulk dip make sure it is kept at the correct concentration and is thoroughly agitated before use.

Panocrine tends to attach itself to organic matter in the dip and gradually settles to the bottom, however with good agitation it is still effective. Compressed air is commonly used for agitation and aeration to minimise odours.

3. In-Line Fungicides

Many smaller sheds are able to pack fruit within 24 hours of harvest and therefore two fungicides must be applied in-line. The most suitable are Panocrine or Deccotane* plus Benlate* or Topsin* or TBZ for persistent fungal protection.

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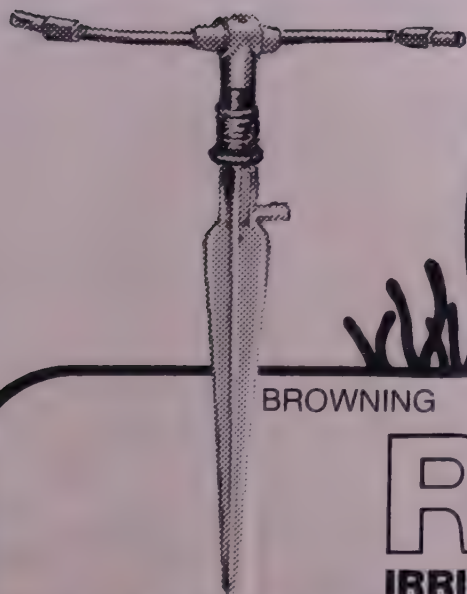
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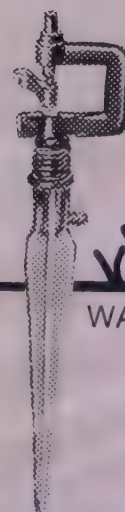
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Big Citrus Promotion Announced for South Australia

The Chairman of the Riverland Development Fund Citrus Marketing Committee, Mr. Peter Critchley, has announced details of a citrus promotion campaign being arranged for South Australia in late July and early August.

The promotion is giving effect to consumer research undertaken by the Committee and completed last year.

Mr. Critchley said that with the Citrus Organization Committee (C.O.C.) having agreed to a substantial commitment, the widespread involvement of sections within the citrus industry was assured. In addition to the funding being provided by C.O.C., financial contributions would also be made by the Sth. Aust. Government through the Riverland Development Fund, Murray Citrus Growers Co-op. Assoc., Adelaide Chamber of Fruit and Vegetable Industries, all Co-operative and many proprietary citrus packers.

\$45,000 has been contributed for the campaign and advertising agents are well on the way to fully developing the programme. Mr. Critchley said a 30 second television commercial was being produced

and the main emphasis would be given to promoting fresh oranges as a versatile product. Point of sale material is being designed to add support to the television advertising.

In addition to providing a share of the funds, each packer is also required to contribute supporting man-power to assist with the distribution of point of sale material to South Australian retailers.

When announcing the promotion details, Mr. Critchley described the campaign as a significant achievement for the citrus industry in South Australia.

He stated that for the first time the near complete involvement of the industry had been obtained for an advertising campaign; from C.O.C. as the Statutory body through packers and merchants and right back to M.C.G.C.A. representing growers.

He added "it is an attempt to put into practice the results of consumer and marketing research. We are using our 'home-state' market as the basis for the campaign and the parties involved have chosen to overlook their own particular market share in an attempt to show whether

advertising is, or can be, effective in the citrus industry."

Mr. Critchley said the campaign is being looked upon as a long term investment for the industry. Consultants will be retained to assess the success of the promotion and it is hoped that the results achieved from this monitoring will provide a basis for any necessary future involvement.

"In view of the current concern about the future of the citrus industry being subject to adequate tariff protection, that this promotional campaign should be adopted at such a critical period is indicative of the widespread desire to protect the interests of the citrus industry."

Further details of the plan will be available shortly to allow citrus growers in the Riverland to be fully aware of the work being undertaken on their behalf.

Mr. Critchley said that irrespective of what the outcome of the campaign might be, the highlight is the manner in which various industry sections have displayed a willingness to work together for the long-term benefit of the citrus growers.

ACGF 1977-79 ECONOMIC SURVEY (Average of F

THE AVERAGE REGIONAL CITRUS

Number of Orchard Returns	STH. AUSTRALIA			MURRAY RIVER NSW	
	13			12	
1. GENERAL STATISTICS	Total	Per Acre	Per Tonne	Total	Per Acre
Full Time Working Partners	12			1.73	
Total Planted Area (Acres)	27.5			65.6	
Total Planted Citrus (Acres)	22.9			62.13	
Number of Citrus Trees	2199	96		7631	123
Number of Citrus Trees N/B	443	(20.15%)		1169	(15.3%)
Number of Citrus Trees over 35 yrs.	364	(16.5%)		2250	(29.5%)
2. PRODUCTION (Tonnes)					
Navels	91			224	
Valencias	150			330	
Grapefruit	21			75	
Lemons	5			24	
Mandarins	6			13	
Total Citrus	273	11.92		666	10.72
Other Fruit	42			48	
Total Orchard	315	11.45		714	10.88
3. CASH COSTS OF PRODUCTION (\$)					
Horticultural	2435	88.55	7.72	5723	87.24
Employed Labour	7486	272.22	23.77	22776	347.20
Plant - Power - Irrigation	4686	170.40	14.88	10429	158.98
Overhead	6379	231.96	20.25	10054	153.26
Total CCOP	20986	763.13	66.62	48982	746.68
4. NETT GROWER GATE RETURNS (\$)					
From Citrus	27118	1184.19	99.33	72024	1159.23
Total Orchard	37726	1226.40	107.07	77751	1185.23
5. RECONCILIATION (\$)					
Nett G/G Returns	33726			77751	
Less CCOP	20986			48982	
Nett Cash Residue	12740	463.27	40.44	28769	438.55
NCR Per Partners	10617			16629	

Recipe of the Month

PORK CHOPS JUBILEE (4 servings)

4 pork chops, 3" thick; salt; flour; shortening; 1/3 cup cherry preserves; 1 teaspoon fresh grated orange peel; 1/2 cup fresh squeezed orange juice; 1 to 2 oranges, peeled, sectioned.

Season chops with salt; coat with flour. Brown in hot fat on both sides. Mix together preserves, orange peel and juice; pour over chops. Cover and gently simmer about 45 minutes or until chops are tender. Remove chops to serving platter.

Let pan drippings bubble 1 minute, if necessary, to thicken slightly. Add orange sections; gently heat until warm. Pour over chops and serve with steamed rice, if desired.

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HARD

MIA

9

Total	Per Acre	Per Tonne
1.67		
57.33		
56.5		
7191	127	
1619	(22.5%)	
781	(10.8%)	

130
398
49
7

584 10.34
6

590 10.29

4494	78.39	7.62
13567	236.65	22.99
5486	95.69	9.30
10368	180.85	17.57
33915	591.58	57.48

52663	932.09	90.18
53824	938.85	91.23

53824		
33915		

19909	347.27	33.74
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11922

NSW COASTAL

8

Total	Per Acre	Per Tonne
1.86		
69.14		
66.57		
11050	166	
2487	(22%)	
196	(1.8%)	

114
235
4
183
10

546 8.2
23

569 8.23

9532	137.87	16.75
13927	201.43	24.48
6033	87.26	10.60
13496	195.20	23.72
42988	621.76	75.55

59045	886.96	108.14
68710	993.78	120.76

68710		
42988		

25722	372.03	45.21
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13829

Citrus Price Rises Recommended

The Australian Citrus Growers Federation has recommended to State and Regional Statutory Citrus Marketing Authorities that the minimum factory prices for Navel and Valencia oranges be increased above the levels determined by the Fruit Industry Sugar Concession Committee at its meeting in Griffith on 24 June.

The recommendation on Navel oranges is for the minimum prices to be increased by a further \$6 to \$89 per tonne for deliveries to country factories, \$93 for intermediate factories and \$97 per tonne for Metropolitan factories as from Monday, 14 July, 1980.

The Federation has also recommended that the minimum prices for factory deliveries of Valencia oranges be increased by a further \$7 to \$105 per tonne for country factories, \$109 for intermediate factories and \$113 for Metropolitan factories for the period from Monday, 13 October, 1980, to Friday, 30 January, 1981.

The decision was taken at a meeting held in Mildura on 3 July between members of the Federation's Working Committee and representatives of State and Regional Citrus Authorities in NSW, Victoria and South Australia.

The meeting was preceded by discussions with representatives of the Australian Citrus Processors Association.

Following on the meetings the President of the Australian Citrus Growers Federation, Mr. Harry Walker, said the recommendations were in line with the prices which had been sought by ACGF at the FISCC meeting at Griffith. The growers considered they were realistic and responsible prices, having in mind the inflationary cost increases which growers had experienced during the past twelve months, and indications that actual prices to be paid by processors for this season's Navel and Valencia oranges would be well above the levels recommended.

He said the recommended increases were for specific periods of the season when optimum juice and soluble solids yields would be obtained and the meeting had seen them as representing a responsible attitude to the question of minimum factory prices.

Mr. Walker said the representative of the Murray Citrus Growers Co-operative Association present at the meeting had expressed concern about the wisdom of the Boards establishing increased minimum prices and had dissented from the decision.

He said the meeting had also reviewed the FISCC decision not to increase minimum prices for grapefruit, which have now been stationary since 1975-76, but it was decided not to recommend any action by the Boards in respect to this variety.

It can be expected the Boards will give consideration to the recommendations on oranges as a matter of urgency.

PUBLICATIONS

A manual has been developed by the Australian United Fresh Fruit and Vegetable Association (AUF) as a working aid to those involved in the marketing of fruit and vegetables.

This manual has comprehensive information on temperature management, controlled ripening, packaging, storage temperatures and atmosphere control and will be reviewed and updated regularly.

Copies are available for \$45 for non members and \$37.50 to members of AUF from, The Executive Officer, AUF, 127 Commercial Road, South Yarra, Victoria, 3141.

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HORTICULTURAL COUNCIL QUESTIONS ROLE OF I.A.C.

The half yearly General Meeting of the Australian Horticultural Growers Council held in Sydney on June 26 strongly questioned the ability of the Industries Assistance Commission to make a relevant contribution to the well being of Australia's horticultural industries.

Of particular concern to the Council is the time and cost involved in producing submissions that are likely to carry any weight with IAC Commissioners.

The Meeting felt that in most cases convincing evidence only became available after the Industry under inquiry has suffered serious economic damage.

The Council has agreed that there would be merit in the appointment of a special "Industry Advisory Member" to each Inquiry to assist the IAC Commissioners and back-up staff in their handling of Inquiries into Horticulture and Horticultural products.

Delegates attending the meeting from the major horticultural industries considered there needed to be a more realistic and effective mechanism established to deal with the question of assistance to the horticultural industry.

Back to School for Export Citrus Growers and Packers

(Continued from page 4)

Benlate and Panoptone do not mix very well and tend to coagulate with a drop in concentration from 500 ppm to 80-100 ppm. This is ineffective. Therefore the mixture must be well agitated and topped up with double strength mixtures, keeping each topping up fungicide separate.

Decotane at 1000 ppm can be mixed with Benlate in-line and should be well

agitated to minimise odours.

SOPP is also approved fungicide for export use.

TBZ and Topsin are benzidamazoles and behave in a similar manner to Benlate.

Mandarins and lemons should have 2,4-D included in the wax or final fungicide. This helps to keep the button fresh and green.

4. Fungicide Concentration

Guazatine (Panoptone)
2-aminobutone (Decotane)
Benomyl (Benlate)
thiobendazole (Tecto, TBZ)
thiophenate-methyl (Topsin)

SOPP

5. Stacking and Loading Fruit

Stack fruit in bins or in cartons in such a manner that they have good air circulation to prevent fruit heating up due to respiration. High temperatures accelerate mould growth and weight loss due to dehydration. Some weight loss can be an advantage if fruit has been picked in a wet turgid state. Allowing a loss of 1% will enable the safer handling of fruit which otherwise may be susceptible to problems such as oleocellosis.

In-Line	Dipping Time	Bulk Dip
500 ppm	30 secs.	250 ppm (top up at 500 ppm)
1%	30 secs.	0.5%
500 ppm	30 secs.)	Top up at double
1000 ppm	30 secs.)	strength when
1000 ppm	30 secs.)	combined with
		Panoptone
2%	2 minutes	

Fungicide treatment should not be delayed.

Always observe loading temperatures and container stuffing procedures, particularly the use of dunnage and head-space for effective air movement.

6. Shed Hygiene

Clean up mouldy fruit regularly as this is a source of infection for other fruit. Mouldy fruit should be placed in bins with a tight lid and disposed of away from the shed. Bulk bins need to be regularly cleaned and checked for rough or broken boards.

The development of fungicide resistant mould strains is a constant problem, not just a problem that needs attention when exporting. This season resistant mould strains have been detected in two sheds in Sunraysia.

7. Plant Maintenance

Ensure all equipment is working effectively. Check wax application, fungicide tank, agitators, drier etc. Build up of grit or wax on conveyors and rollers will cause rind damage, particularly to turgid fruit, lemons and mandarins.

When packing lemons and mandarins keep distance travelled and handling to a minimum and avoid high conveyor speeds if possible.

Summary

Keep sound fruit in good condition by preventing fungal attack and protecting the rind from mechanical abrasions. Make sure that when fruit leaves your shed you know it is the best possible condition to reach its market safe and sound.

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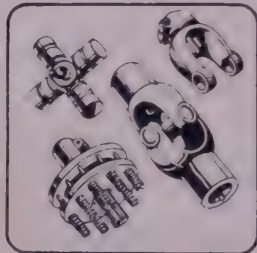
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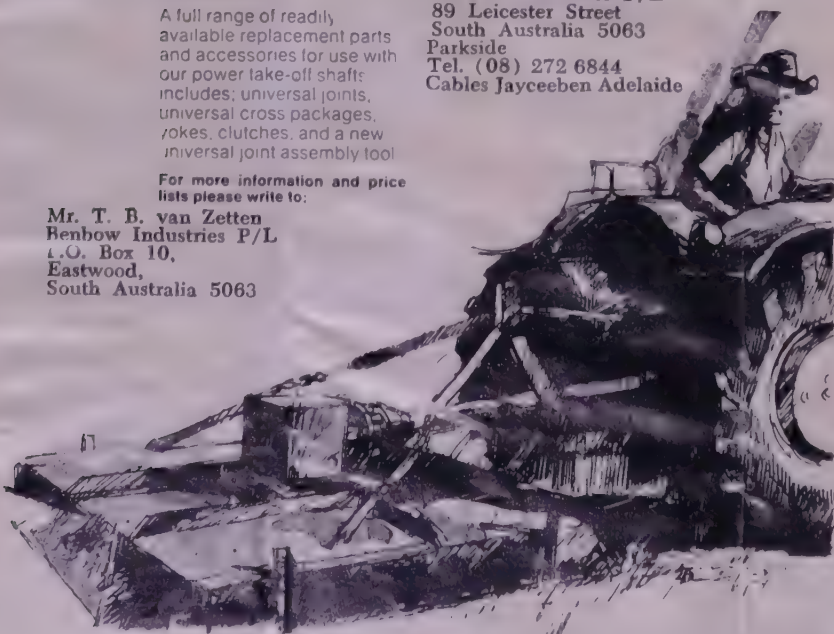
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AUSTRALIAN CITRUS NEWS

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HANDLING AND STORAGE OF CITRUS

By I. D. PEGGIE, Senior Research Officer (Cool Storage) Department of Agriculture, Victoria.

Fruit on a tree goes through the various stages of growth to old age, and ultimately dies. When we make our normal harvest the fruit is alive, and our aim is to get it to the consumer while it still has plenty of life in it.

Citrus is a little different to many of our temperate tree fruit in that it holds or stores on the tree nearly as well as it does in commercial storage. The end of life, either on the tree or in a store, is marked by the loss of flavour, or even the development of objectionable off type flavours, and the occurrence of rind disorders and mould. Usually loss of palatability and flavour comes several weeks before a rapid development of mould. Although we may be able to control wastage during the life of the fruit, we cannot control this natural mould attack on dying tissue.

The life of citrus can be cut short by the development of physiological injuries, such as scald or breakdown. The quality of the fruit can also be reduced by wilting.

EFFECTS OF TEMPERATURE

The living process, or respiration, produces heat. The warmer the fruit the more rapid is this heat production, so that warm fruit can self heat quick rapidly if ventilation is restricted. This can occur in a closed room, or with large stacks of fruit, or in packaged fruit. At around 25°C self heating can raise the fruit temperature by up to 2° per day. This is about three times the rate of heating of fruit at 10°.

The rate of deterioration is also related to this respiration rate, so that fruit at 10° has three times the life of fruit at 25°. A shorter life means a faster loss of quality, and this starts from the moment the fruit is picked from the tree. It is therefore important for growers, packers and transporters to cool warm fruit as quickly as possible, or alternatively to prevent any rise in fruit temperature.

To obtain the longest possible storage life, and have the best quality fruit, we must store at low temperatures. Unfortunately, citrus fruit are susceptible to low temperature, or chilling, injury and this puts a limit on how low a temperature we can store them.

Storage trials over many years in Vic-

toria have shown that about 5°C gives the best results for long storage of oranges. Early season fruit is more susceptible to cold injury than mid-season or late fruit, but regreened Valencias are liable to cold injury. Trials have also shown that fruit from warm districts are more sensitive to low storage temperatures than fruit from "late" districts.

Storage at 0°C is used in some overseas countries, but with our fruit the storage period at 0°C should not exceed two weeks. A low temperature treatment to sterilize oranges against possible fruit fly infestation requires storage at 0°C for 14 days. This treatment is about the limit for early fruit.

(Continued on page 11)

Fresh Citrus Exports

APRIL SUMMARY

AUSTRALIAN FRESH FRUIT EXPORTS BY STATES (Tonnes)

	QLD.	N.S.W.*	VIC.*	S.A.	W.A.	TOTAL
Grapefruit	3.8	—	—	0.2	—	4.0
Lemons	3.3	0.3	2.5	11.5	9.1	26.7
Limes	0.1	—	—	—	—	0.1
Mandarins	9.7	—	—	—	—	9.7
Oranges	40.3	7.1	76.4	40.9	—	164.7
	57.2	7.4	78.9	52.6	9.1	205.2

* Vic./NSW Border Districts.

AUSTRALIAN FRESH FRUIT EXPORTS BY DESTINATIONS (Tonnes)

	G-fruit	Lemons	Limes	M-rins	Oranges	Total
PNG & Solomon Islands	2.1	3.8	—	5.6	52.9	64.4
Pacific Islands	1.6	1.2	—	0.3	74.2	77.3
Indonesia	0.1	2.1	—	—	5.6	7.8
Hong Kong	—	—	0.1	—	—	0.1
Singapore	—	17.4	—	0.1	21.0	38.5
Philippines	—	0.7	—	—	1.0	1.7
Malaysia	—	1.1	—	—	—	1.1
Christmas Islands	0.2	0.4	—	—	10.0	10.6
Kuwait	—	—	—	1.4	—	1.4
UAR	—	—	—	1.7	—	1.7
Bahrain	—	—	—	0.6	—	0.6
	4.0	26.7	0.1	9.7	164.7	205.2

MAY SUMMARY

AUSTRALIAN FRESH FRUIT EXPORTS BY STATES (Tonnes)

	QLD.	N.S.W.*	VIC.*	S.A.	W.A.	TOTAL
Grapefruit	2.9	0.1	—	—	—	3.0
Lemons	4.0	0.4	2.4	34.3	46.4	87.5
Limes	0.2	—	—	—	—	0.2
Mandarins	36.8	6.5	—	—	—	43.3
Oranges	48.7	0.2	23.0	7.5	—	79.4
	92.6	7.2	25.4	41.8	46.4	213.4

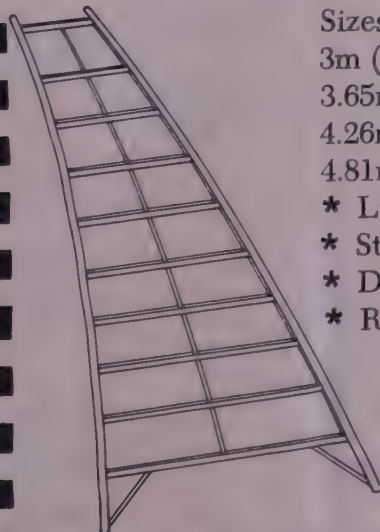
* Includes Vic/NSW Border Districts.

AUSTRALIAN FRESH FRUIT EXPORTS BY DESTINATIONS (Tonnes)

	G-fruit	Lemons	Limes	M-rins	Oranges	Total
PNG & Solomon Islands	2.0	2.7	—	17.6	49.0	71.3
Pacific Islands	0.5	0.5	—	0.5	13.0	14.5
Indonesia	—	1.5	0.2	1.6	6.7	9.0
Hong Kong	—	—	—	—	0.2	0.2
Singapore	—	77.0	—	1.7	—	78.7
Philippines	—	1.8	—	1.5	1.2	4.5
Malaysia	—	3.6	—	—	5.0	8.6
Christmas Islands	0.2	0.1	—	—	4.0	4.3
Kuwait	—	—	—	12.1	—	12.1
UAE	0.2	0.2	—	1.7	0.2	2.3
Bahrain	0.1	0.1	—	6.6	0.1	6.9
	3.0	87.5	0.2	43.3	79.4	213.4

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NSW Citrus Plantings Remain Stable

By J. B. FORSYTH, Principal Horticulturist (Citrus), NSW Department of Agriculture

The State citrus planting census as at 31st December, 1979, continues to indicate a stabilising effect of plantings which commenced in the previous year, compared with continuing declines in areas that occurred in the 1974-77 period. Total areas have shown an increase of 275 ha during the year with planting increasing from 11,787 ha to 12,062 ha.

Of the major citrus growing localities in the Coastal districts, Maitland areas remained stable, Gosford increased by 67 ha while the Hawkesbury/Hills was reduced by a further 88 ha during the year. However, in Inland districts the M.I.A. increased by 251 ha and the Lower Murray by 65 ha, while the Western (Narromine-Bourke) and Mid Murray districts remained stable.

The area of navels increased by 20 ha during the year with minor new plantings in most districts. The non-bearing area again increased slightly to 5.2% with continuing interest in Lanes Late and Washington navel varieties.

Total Valencia areas again increased 274 ha after an increase of 191 ha in the previous year. These new plantings are in both Coastal and Inland districts but the major increase in plantings have been on the M.I.A. with 227 ha and the Lower Murray 36 ha. Nonbearing areas again increased by 233 ha or 16% of plantings. This trend continues to reflect the current strong demand for valencias by processors.

A gradual decline in lemon plantings since 1974 has been reversed with a slight

increase in total area by 8 ha. The non bearing plantings continued to decline slightly to 9.9%.

The area of mandarins continues to decline with a further reduction of 17 ha mainly in the Hawkesbury/Hills district. A low non bearing area of only 1.9% reflects the general lack of interest by growers in new plantings particularly with the main Emperor and Imperial varieties.

Tangor plantings, particularly Ellendales, continued to decline slightly by 16 ha during the year, mainly in Coastal

districts, while plantings have remained stable in the main Lower Murray district. The non bearing area of only 1.7% will not maintain existing areas.

The total area of grapefruit which has been generally stable since 1974 showed a minor increase of 7 ha during the year. The significant decline in non bearing plantings over the same period (from 39.6% to 14.4%) continues to indicate little grower interest in new plantings following increased production from the heavy plantings made in the late 60's which are now causing marketing problems.

COMPARISON OF NSW CITRUS AREAS IN HECTARES (a)

CITRUS VARIETY	DECEMBER 1978			DECEMBER 1979		
	Bearing (b) ha	Total ha	% Non Bearing	Bearing (b) ha	Total ha	% Non Bearing
Navels	3,316	3,464	4.3	3,304	3,484	5.2
Valencia	5,377	6,175	12.9	5,418	6,449	16.0
Other Sweet Oranges	38	39	2.6	39	40	2.5
Total Oranges	8,731	9,678	9.8	8,761	9,973	12.2
Lemons	966	1,087	11.1	986	1,095	10.0
Limes	4	7	42.9	3	7	57.0
Mandarins	323	328	1.5	305	311	1.9
Tangors	188	192	1.2	173	176	1.7
Tangelos	10	12	16.7	13	14	7.1
Grapefruit	385	465	16.8	404	472	14.4
Sevilles and Others	18	18	5.6	13	14	7.1
TOTAL CITRUS	10,625	11,787	9.9	10,658	12,062	11.6

(a) All figures rounded off to nearest hectare.

(b) Bearing age includes trees 6 years from planting and over for all varieties except lemons and limes which are four years and older.

Comparison of total citrus areas for the last 6 years may be summarized as follows:

1974	13,134 ha	1976	12,143 ha	1978	11,787 ha
1975	12,650 ha	1977	11,720 ha	1979	12,062 ha

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River Murray Commission Storages, Diversions and Water Supply

JUNE SUMMARY

STORAGES	Capacity	Week ending
	Megalitres	25-6-80 Megalitres
Hume Reservoir	3,038,000	785,000
Lake Victoria	680,000	574,000
Menindee Lakes	1,794,000	1,176,000

WATER FLOWING TO SOUTH AUSTRALIA

Week ending 25-6-80	27,000
Monthly entitlement for June	90,000
Total for June to 25-6-80	83,000
Total for May	111,000

WATER QUALITY

(Average quality for week — total dissolved solids in parts per million)

	27-6-79	25-6-80
Swan Hill	116	232
Euston	116	142
Red Cliffs	194	289
Merbein	191	416
Lock 9	226	360
Lake Victoria	262	300
Berri	254	504
Walkerie	324	678
Mannum	436	576
Murray Bridge	479	582

— (Extracts from River Murray Commission Reports).

HANDLING AND STORAGE OF CITRUS

(Continued from page 9)

Cold injury appears in several ways, usually as skin browning, gooseflesh, yellowing and skin breakdown.

Cool storage of Valencias has been shown to have good commercial use in avoiding losses from granulation and ageing. If harvested in mid-November, they have better colour, acceptable flavour and little wastage when held at 5° to 7°C for up to three months. Similar results have been achieved with lemons. Careful picking, good fungicidal treatment and avoidance of over-mature or immature fruit are essential for success.

High temperatures can be as serious as low temperatures in damaging fruit. Four days at 35°C will produce bitter flavours in Navel oranges, and even one day at 40° will affect the flavour. Despite their maturing in the warmer months, Valencias suffer the same heat injury.

TEMPERATURE AND MOULD GROWTH

The rate of growth of mould is directly related to fruit temperature. Work done in Victoria in 1931 showed that Green Mould (*Penicillium digitatum*) and Blue Mould (*P. italicum*) develop fastest at 21° to 25°C. In this temperature range, it only takes about 2 days from the time of infection until the first rot spot appears, and within a week the mouldy area can cover much of the fruit. At 15°C about 6 days are required to develop a 25 mm rot, but at 10° it takes 10 days to develop at the same size. Rot development is much slower at 5°, taking two to three weeks for a 25 mm rot to develop.

Other mould affecting citrus show similar effects of temperature on growth. Brown rot (*Phytophthora citrophthora*) causes maximum infection and growth around 22°C, but with little growth below 7°C. Stem end rot (*Diaporthe citri*) grows best at 27°-30°, but also has a lower limit around 7°C.

WILTING AND MOISTURE LOSS

We generally think of low humidity as the main cause of wilting, and we expect that waxing will solve the problem. These ideas are only partly true.

Moisture loss depends on the water-vapour pressure in the air surrounding the fruit. This, in turn, depends on both the temperature and humidity of the air. Reducing the air temperature quickly raises the relative humidity, but more importantly the drying power of the air or

vapour pressure deficit, is very greatly reduced as the temperature falls.

High summer temperatures, with low humidities, give very rapid moisture loss. Oranges which are originally firm and fresh will have lost their freshness by the time they have lost 2% of their weight, and at 5% weight loss are obviously wilted. Trials in Mildura in 1970-71 with Valencias showed that oranges in bins held in a packing shed lost weight quite rapidly. At mean conditions of 17°C and 47% RH, weight loss in 11 days ranged from 5% in large fruit in the centre of a bin to 11% in small fruit on top of the bin. On average, weight loss was about 0.5% per day. However, other workers have reported losses up to 2.4% per day at 32°C and 50% RH in Mildura.

The same survey showed average temperatures of fruit in bins in the shed as 11° in August, 14° in September, 18° in October, 20° in November, 22° in December and 25° in January. Fruit on top of the bins was even warmer, and if exposed to the sun could be quite hot, e.g. in October, 3 hours in the sun with air temperature of 21° gave 32° fruit temperature. As moisture loss is related to fruit temperature, avoiding warming fruit, and getting the temperature down in summer is essential in reducing shrivelling.

In a storage situation, an atmosphere with about 90% RH will prevent wilting, even of non waxed fruit. However, such a high humidity is not always provided when refrigeration units are working to their full capacity on precooling, or when heat loads are high due to poor insulation, or when undersized cooling units are used.

Waxing does reduce moisture loss, but the amount of wax normally applied in our sheds does little more than put a shine on the fruit. A reduction of around 20 to 50% of the weight loss of unwaxed fruit can be expected.

Some weight loss is desirable to avoid skin injury. Very turgid fruit picked wet or in cold damp conditions is easily damaged during handling. Any oil cells which are broken release rind oil which spreads over the skin, causing oleocellosis. Allowing up to 1% weight loss to occur will reduce the turgidity of the cells, making them less liable to rupture. This "sweating" treatment must not be given at the risk of delaying fungicidal treatments.

ATMOSPHERE CONTROL

Controlled atmosphere storage has given very useful increases in the storage life of apples and pears. Unfortunately, such benefits do not apply to citrus. A harmful effect is noticed when carbon dioxide is allowed to increase. Even low levels of 0.2% may reduce storage life, but ventilation to keep carbon dioxide below 1% is recommended in storage and overseas shipment.

Of more interest is the removal of ethylene, a gas which is naturally produced by ripening fruit and which acts as a ripening hormone. Trials with lemons have given excellent results, especially when ethylene removal has been combined with low oxygen and nil carbon dioxide. New South Wales trials obtained good quality lemons for up to 6 months with storage at 10°C. Ethylene is important as it favours mould growth as well as advancing ripening and colouring.

RECOMMENDED STORAGE CONDITIONS FOR CITRUS

These recommendations apply to fruit
AUSTRALIAN CITRUS NEWS

which is mature, have been carefully handled during harvesting, transport and in the shed, and have been given an effective fungicidal treatment.

Variety	Temp.	Humidity	Storage Life
Oranges			
Navels (early)	7°	90%	3 months
(late)	5°	90%	2 months
Valencias			
(early)	7°	90%	3 months
(late)	5°	90%	3 months
Mandarins			
(Ellendales)	7°	90%	1½ months
(late varieties)	5°	90%	1½ months
Lemons	10°	80%	4 months
Grapefruit	10°	80%	3 months

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NEW MINISTER FOR AGRICULTURE IN N.S.W.

In February of this year Mr. Jack Hallam was appointed Minister for Agriculture in the NSW State Government.

Mr. Hallam was born in Griffith and has lived there all his life.

He was elected to the NSW Legislative Council in April, 1973 and since 1978 has held the portfolios of Minister for Decentralisation and Minister Assisting the Premier.

A farmer in Griffith for 17 years, Mr. Hallam sold his rice farm early in 1976 because of his increasing political responsibilities. He is a former Secretary of the old United Farmers and Wool-growers Association in NSW.

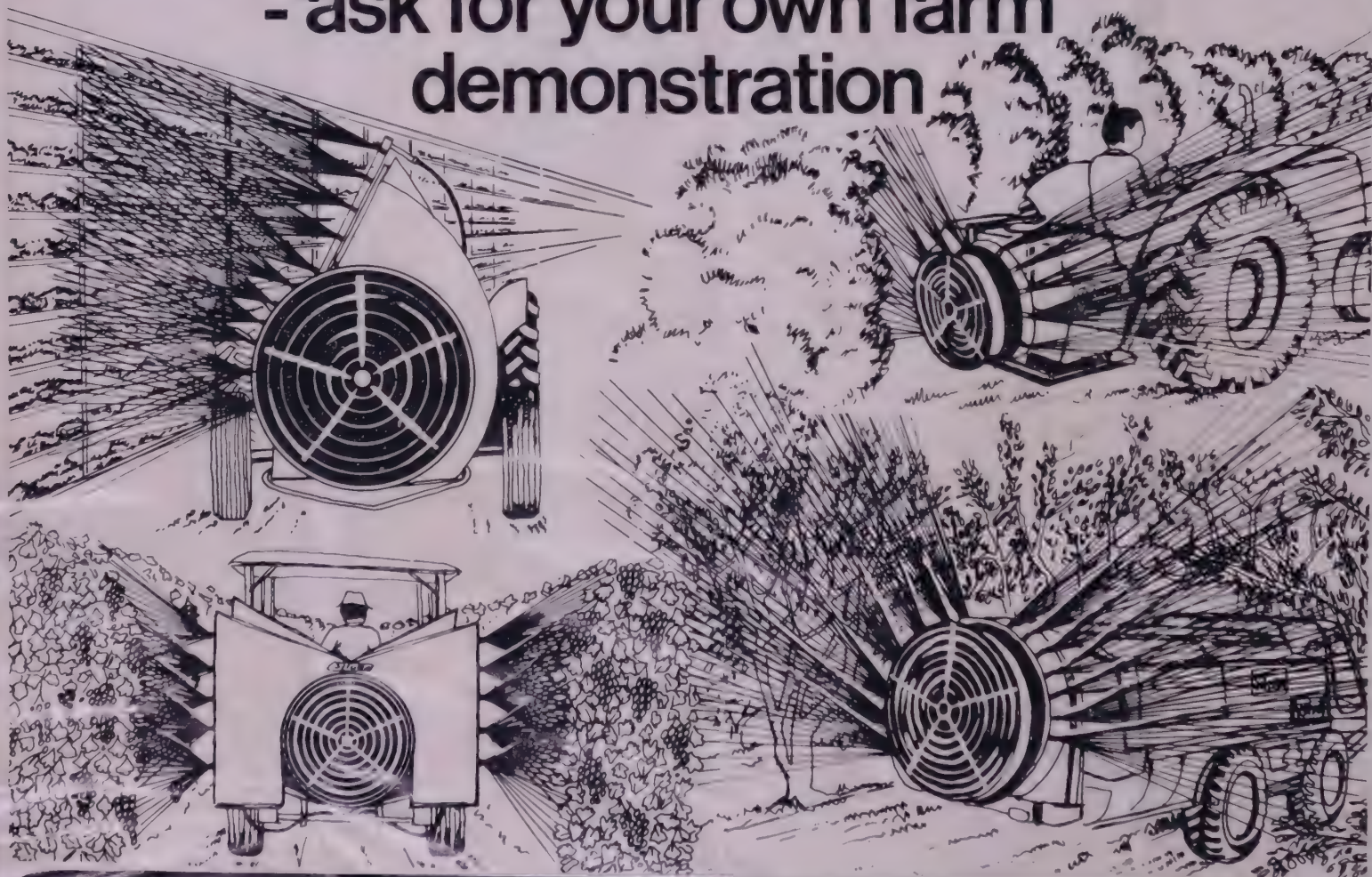


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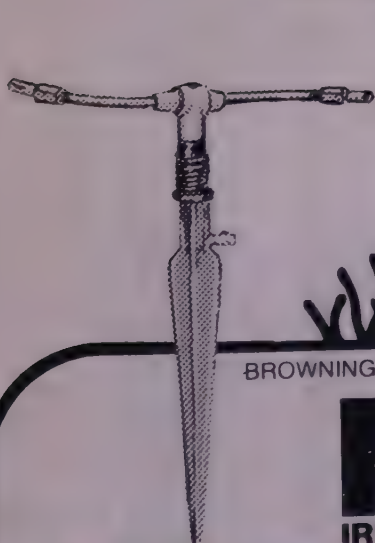
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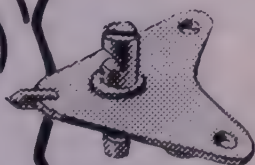
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VALE — KEN OAKES

The Australian Citrus Industry mourns the passing of Ken Oakes at Griffith on 25th July, 1980, following a severe heart attack.

At the time of his death Ken was the Vice-President of the Mirrool Citrus Growers Association and had had a long association with the citrus industry in the Murrumbidgee Irrigation Area spanning over many years.

After serving in the R.A.A.F. as a tail-gunner in bomber raids over Europe during the Second World War, Ken eventually settled on the fruit property presently occupied by the family in Griffith.

During the intervening years he took an active interest in community affairs and was also actively associated with other sections of the fruit industry. For many years he was secretary of the N.S.W. Canning Fruitgrowers Association and a delegate to the Australian Canning Fruitgrowers Association. He also served for a period as Chairman of the Australian Canned Fruit Sales Promotion Committee.

He leaves a widow, Helen, and two teenage children and the sympathy of all citrus growers goes to them.

Ken was 59 years of age at the time of his death.

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INDUSTRY DOINGS

ACIC ANNUAL MEETING

The first annual meeting of the Australian Citrus Industry Council will be held in Melbourne on Wednesday, 17th September, 1980.

Important subjects listed for discussion include Industry Statistics, Imports, and Market Research and Promotion.

Current President of the Council is Mr. John Darnley Naylor of Leeton.

LEN BEALES REELECTED IN W.A.

Mr. Len Beales has been re-elected Chairman of the Central Citrus Council of Western Australia for 1980/81. He was unopposed for the position.

Messrs R. H. Bacon and D. H. Dell were also re-elected unopposed as Vice-Chairmen.

The Council's Factory Committee comprises Messrs G. L. Beales, A. T. Niven and I. K. Blackburn.

C.O.C. RESIGNATIONS

Mr. Eric Brown, of Loxton, and Mr. Des Newman, of Waikerie, have resigned from the Citrus Organisation Committee of South Australia.

In announcing the resignations recently, the C.O.C. Chairman, Mr. P. T. Sanders, paid tribute to the service rendered by the two former members over a long period. He said they had both been Directors of the Citrus Management Company at Mildura and had also represented C.O.C. at Riv-Sam meetings for a number of years.

It is understood that Mr. Brown's resignation was for health reasons and that Mr. Newman has now sold his citrus property.

Mr. Bob Poignand, the Assistant Secretary of C.O.C., has also resigned recently.

C.O.C. OFFICER TO UNDERTAKE OVERSEAS STUDY

Mr. Harry Debney, Co-ordinator, Technical Services at C.O.D. Brisbane, has been granted an Overseas Study Travel Award to undertake a study of packaging systems, temperature management and handling of fresh fruit and vegetables in relation to produce packaging rationalisation in the U.S. and Europe.

The Award was announced recently by the Minister for Primary Industry, Mr. Nixon, and is one of three such Awards

funded from the National Projects Portion of the Commonwealth Extension Services Grant in 1980/81.

The Awards are for a programme of full-time work of up to three months and are valued at about \$5,000 each.

MINISTER TO OPEN THE "BIG ORANGE"

The South Australian Minister for Tourism, Mrs. Jenny Adamson, will officially open the "Big Orange" at Berri on Sunday, 7th September.

The impressive tourist attraction is believed to be the largest fibreglass sphere in the Southern Hemisphere.

The 16 metre structure is situated on the Sturt Highway about four kilometres east of Berri. Total cost has been estimated at \$140,000.

NEW MINISTER AND DIRECTOR-GENERAL IN QUEENSLAND

Queensland has a new Minister for Primary Industries in 38 year old Mike Ahern.

His appointment to this important portfolio follows on the retirement from the Queensland Parliament of Mr. Ron Camm, the former Minister for Mines and Energy, and the transfer of the popular former Minister for Primary Industries, Mr. Vic. Sullivan, to the portfolio of Mines and Energy and Deputy Leadership of the Queensland National Party.

Mr. Ron Camm has now been appointed Chairman of the Queensland Sugar Board.

Dr. G. I. Alexander has also been appointed Director-General of Primary Industries in Queensland following on the retirement of Mr. Elton Burns from that position this month.

Dr. Alexander has been Deputy Director-General since 1978.

Mr. Burns' career with the Department has spanned a period of 47 years.

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Ian Sinclair Returns to Federal Ministry

Citrus growers have welcomed the news of Mr. Ian Sinclair's reinstatement as a Minister in the Fraser Government.

Following on his acquittal of charges laid against him in the N.S.W. Courts in respect to alleged offences under the N.S.W. Companies Act and the Crimes Act, Mr. Sinclair has been appointed Minister for Special Trade Representations.



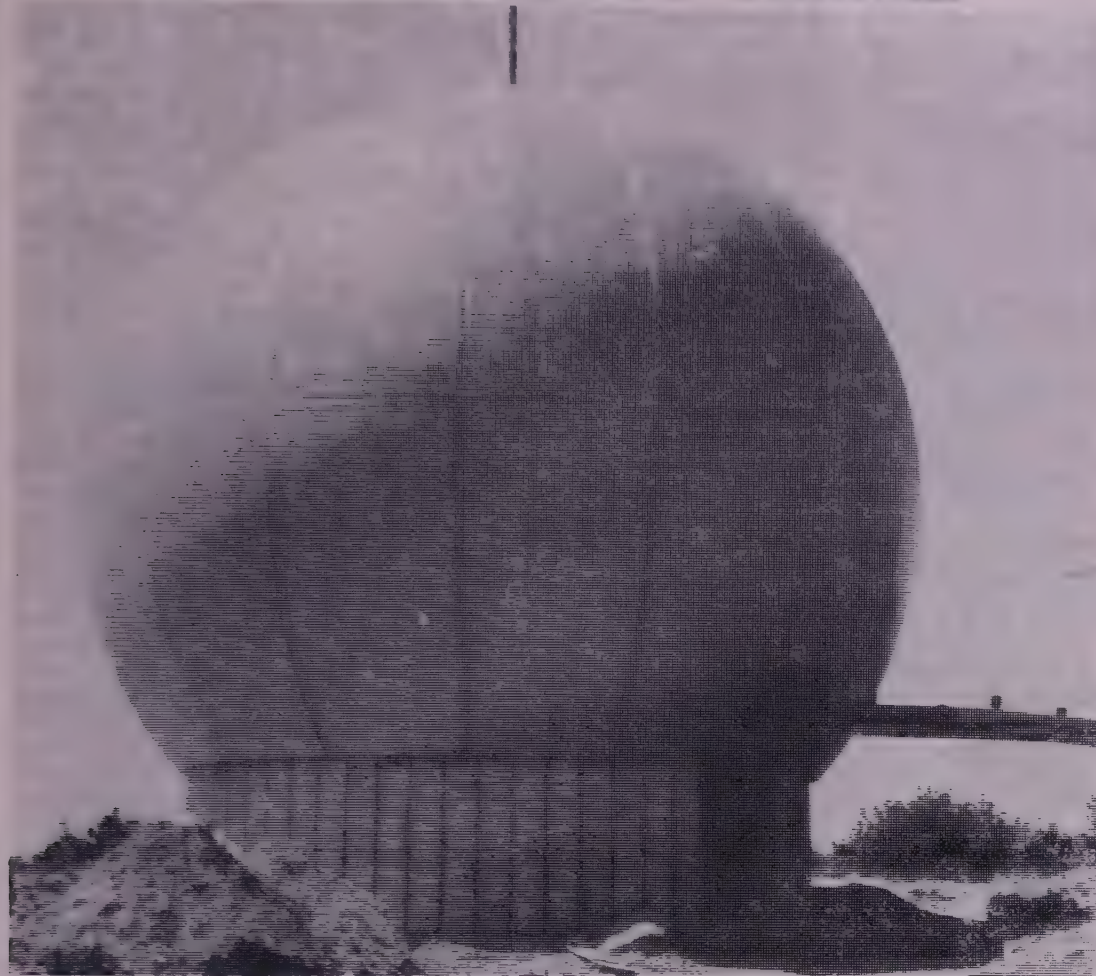
Mr. Ian Sinclair

He has also been re-elected as Deputy Leader of the National Country Party and Leader of the Government in the House of Representatives, positions which he held prior to his resignation from the Ministry last year.

Mr. Sinclair has been a valuable ally and adviser to the Australian citrus industry for many years. He was Minister for Primary Industry at the time of the I.A.C. Inquiry into the industry and played a major part in achieving the variable tariff arrangement currently protecting the industry against cheap imports of orange and mandarin juices.

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RIVERLAND'S BIG ORANGE



Shown during construction the "Big Orange" at Berri will be officially opened by the SA Minister for Tourism on Sunday, 7 September.

Recipe of the Month

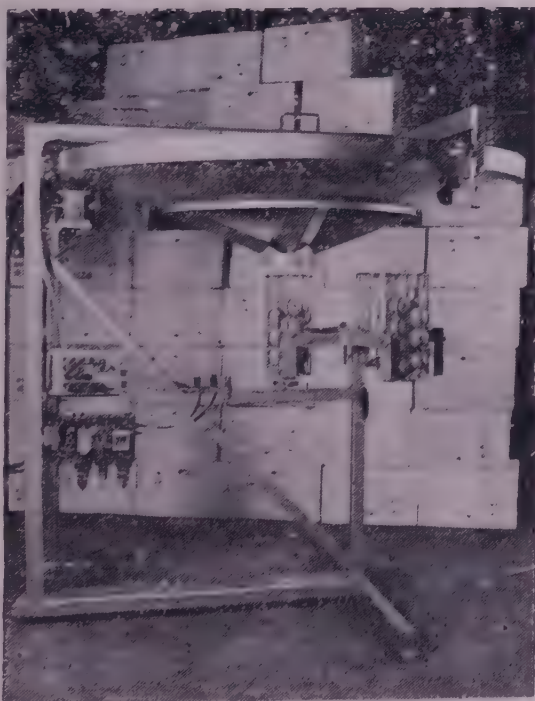
LEG OF LAMB WITH ORANGE FLOWER GARNISH

- 5 pound leg of lamb
- $\frac{1}{2}$ cup firmly packed brown sugar
- 1 tablespoon fresh grated orange peel
- $\frac{1}{2}$ cup fresh squeezed orange juice
- 1 tablespoon prepared mustard
- 1 teaspoon fresh grated lemon peel
- 1 teaspoon dry mustard
- $\frac{1}{2}$ teaspoon ground ginger
- Orange peel flower garnish*

Place lamb fat-side-up on rack in open roasting pan. Roast at 325°F for 2 hours. Meanwhile, to make glaze, in small saucepan, combine remaining ingredients except garnish. Bring to boil. Reduce heat; simmer 5 minutes. Remove lamb from oven. Arrange orange peel flower on lamb; secure with toothpicks. Brush with glaze. Roast 20 mins. longer or until 170°F on meat thermometer for medium doneness. Brush occasionally with glaze. Makes 6 to 8 servings.

*To make orange peel flower: Score peel lengthwise into quarters; remove. Cut each quarter peel into 2 petal shapes. From one quarter, also cut one lengthwise strip for stem. Use 6 petals for flower and 2 for leaves.

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The Importance of Orderly Marketing

Recent publicity in the Mildura press has highlighted the important role that the State and Regional Statutory Citrus Boards play in the orderly marketing of citrus fruits in Australia.

The case in question involves a grower at Colignan, Victoria, who has not been prepared to sign the necessary agreements with the Citrus Fruit Marketing Board in Victoria, thus enabling the Board to divest the fruit from the Board back to the grower.

After over twelve months of protracted negotiations with the grower, the Board has had no alternative but to vest the citrus fruit grown on the property in the Board.

Following on the announcement of the Board's decision the grower notified the Board that all citrus fruit produced on his property was subject to trade, commerce or intercourse between States and was not affected by the Marketing of Primary Products Act.

The Citrus Fruit Marketing Board operates an "exemption" style of marketing system. The initial vesting authority is used to establish a system of Agreements, for which growers are given the opportunity to regain the property in their fruit if they agree to follow the terms of the "Assistance Agreement" executed with the Board.

The "Assistance Agreement" requires growers to confine their fruit to approved packers, approved wholesalers and approved processors, each of whom in turn have completed approval Agreements with the Board.

The Agreement between the Board and Packers, Wholesalers and Processors, requires, amongst other things, that the persons concerned follow the marketing instructions made by the Board in consideration for the approval given to continue handling citrus fruits produced in the area covered by the Board.

Section 92 of the Federal Constitution does provide for trade within the Commonwealth to be free and it would be wonderful if every citrus grower could market his own fruit when and where he wished and without any interference in price returns received for the fruit.

Unfortunately, under such a system the majority of our citrus growers would go bankrupt because they would be competing with each other for sales and price returns and very few would survive.

A major asset that Australian citrus growers have are the State and Regional Statutory Citrus Boards which usually operate in those areas and States where a major share of the production is sold on the fresh fruit market.

Many horticultural industries in Australia look with some envy at the Statutory Boards which currently operate in many regions of the citrus industry.

Boards are not "one desk selling" organisations as they allow the grower to retain control over his fruit provided he complies with certain conditions which are aimed at ensuring the orderly marketing of the crop and with a view to EVERY GROWER benefiting from the arrangements.

Surely, a grower's compliance with the conditions laid down by the Board, and his contribution to the costs of operating the Board's affairs, is an investment in his future viability which must and does provide satisfactory dividends.

As I reported in the July issue of "Australian Citrus News" the successful orderly marketing of citrus fruits on the Australian market depends on having a minimum number of sellers and a maximum number of buyers; regulating the supply of fruit to meet the market's needs; ensuring a high level of quality; ensuring a reasonable return to the grower at the same time as providing good value for money to the consumer; and effective promotion.

Following on the I.A.C. Inquiry into the Citrus Industry held in 1976 and 1977, A.C.G.F., working closely with the Commonwealth Government, was able to play a part in achieving satisfactory tariff protection arrangements against unfair import competition from citrus juices. These arrangements have brought a considerable degree of stability to that sector of the industry.

But the Statutory Citrus Boards are the only mechanism available to the industry by which any semblance of orderly marketing can be established and sales maximised in the marketing of citrus fruit on the fresh market.

The Boards are active member organisations of A.C.G.F. and play an important role in the total administrative structure of the industry.

No industry organisation is perfect. It is only as good and effective as the growers want it to be.

The industry needs the grower from Colignan in the team so that his ideas, suggestions and constructive comments can help to improve the industry's performance and results.

I appeal to all growers to get behind your District and State grower organisation and your Boards and help them to work effectively for your good and the good of the entire industry.

Never wreck something unless you know that what you are going to put in its place is going to be better than what you've got — else you could be left with nothing at all.

HUGH COPE,
Editor.

PLANT VARIETY RIGHTS SCHEME

At a meeting of the Australian Agricultural Council held in Brisbane early in August, the Minister for Primary Industry, Mr. Nixon, gave details of plans by the Commonwealth Government to table draft legislation early next year for the introduction of a plant variety rights scheme in Australia.

Mr. Nixon said the Government would allow the legislation to remain on the table until the budget session of 1981.



Mr. Peter Nixon

This would allow time for public discussion on the proposal, which was a matter of great importance to Australian agriculture.

Ministers acknowledged there was considerable concern in the community about the proposed scheme.

Mr. Nixon gave an assurance that Ministers and the general community would be able to consider the legislation after it had been introduced into the Commonwealth Parliament.

"If the Agricultural Council then decides it does not want to proceed with the scheme, the Commonwealth will not take the legislation through the Parliament", Mr. Nixon said.

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Development Costs for M.I.A. Citrus

By PHIL PENMAN, Economist, Department of Agriculture, Leeton.

The benefits of various planting densities for citrus in the M.I.A. have been discussed and outlined on numerous occasions. Growers considering planting additional areas should be aware of the costs and expenditures for these planting densities.

A cash flow development budget has been prepared for valencia oranges planted at densities of 450 trees/hectare (normal, 6.7 m x 3.3 m) and 900 trees/hectare (dwarf, 4.6 m x 2.4 m) on an existing horticultural farm in the M.I.A.

There has been a deal of interest devoted to the effects of net returns of higher planting densities within the citrus industry. This article briefly outlines the results which are printed in a more extensive publication of various planting densities.

The following cash flow development budgets only consider those direct costs associated with the planting of an additional hectare of citrus. No allowance has been made in this analysis for land or plant purchase, or for irrigation development. Further, no consideration of farm overheads has been attempted in this analysis because of the desire to distinguish between the cash movements relating to both developments under the alternative planting densities.

COMPARISONS OF THE BUDGETS

The budget for 'normal' plantings indicates that an annual surplus is first achieved in year 5, which is the second crop year (i.e. \$317.07/ha). This compares to the 'dwarf' plantings where an annual

surplus is first achieved in year 4 — the first crop year (i.e. \$78.40/ha). However 'normal' plantings achieve a cumulative surplus a year ahead of 'dwarf' plantings — year 7 opposed to year 8. However if the budgets are extended to year 9, the cumulative surplus of the 'dwarf' budget is then greater than the 'normal' plantings.

The peak debt for 'normal' plantings occurs in the fifth year comprising of the previous year's cumulative deficit of \$2374.34 and the expenses for the fifth year of \$582.93 — a total debt of \$2957.27 per hectare.

The peak debt for 'dwarf' plantings is virtually double that of the lower density areas. However, peak debt occurs a year earlier in year 4, comprising the cumulative deficit from the previous season of \$4537.01 and the expenses of the fourth year of \$421.45 — a total peak debt of \$4958.61/hectare.

The difference between 'annual surplus' and 'net profit' should be fully realised. The annual surplus is that amount available to the grower from the additional hectare of trees, to help meet farm overhead costs and plant establishment, permanent and owner-operator labour costs and taxation. The residual is then a net profit.

LABOUR ASSUMPTIONS

The following labour operations have been assumed to be performed by the farm owner-operator, hence the exclusion from the budgets of any associated labour costs.

- (i) initial land preparation and all subsequent cultivations
- (ii) fertiliser and herbicide application
- (iii) all irrigations.

Casual labour inputs have been included in the cash flow budgets, for half the total required labour input of planting the additional hectare of trees, at \$5.00 per man hour. In addition, contract rates were used for harvesting and cartage.

CITRUS PRICES AND RETURNS

Minimum prices for processing citrus in Australia are determined each year by the Fruit Industry Sugar Concession Committee. The valencia price as determined by F.I.S.C.C. for fruit delivered to country locations in 1979/80 is \$90/tonne.

However, in the M.I.A. most valencia oranges are delivered to juice processors — 71 per cent in 1978/79. This marketing strategy together with an increase in demand for fruit juice has forced the general prices received for processing fruit in this area higher than the F.I.S.C.C. minimum price — up to \$110/tonne in 1979/80.

(Continued on page 10)

CASH FLOW DEVELOPMENT BUDGET

Planting Density — 900 trees/hectare

Expenses/Hectare	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8
Land preparation	85.20	—	—	—	10.88	—	—	—
Weed Control — Herbicide and Cultivation	32.64	76.10	76.10	61.65	99.10	68.21	68.21	68.21
Planting Material and Planting Out	3795.00	—	—	—	—	—	—	—
Irrigation Costs	38.00	38.00	51.00	51.00	63.00	63.00	63.00	63.00
Pest and Disease Control	21.40	44.00	37.40	70.81	142.02	155.75	163.98	169.45
Nutrition	52.42	80.16	100.59	123.14	127.28	135.68	136.92	137.75
Harvest — \$18/tonne	—	—	—	90.00	216.00	360.00	486.00	639.00
Cartage — \$5/tonne	—	—	—	25.00	60.00	100.00	135.00	177.00
TOTAL	4033.66	238.26	265.09	421.60	718.28	882.64	1053.11	1254.41
Income/Hectare								
Tonnes per hectare	—	—	—	5.0	12.0	20.0	27.0	35.5
Gross Income per hectare (\$100/tonne)	\$ —	\$ —	\$ —	\$ 500.00	\$ 1200.00	\$ 2000.00	\$ 2700.00	\$ 3550.00
Total Expenses/hectare	\$ 4033.66	\$ 238.26	\$ 265.09	\$ 421.60	\$ 718.28	\$ 882.64	\$ 1053.11	\$ 1254.41
Annual Surplus/Deficit	\$ —4033.66	\$ —238.26	\$ —265.09	\$ 78.40	\$ 481.72	\$ 1117.36	\$ 1646.89	\$ 2295.59
Cumulative Surplus/Deficit	\$ —4033.66	\$ —4271.92	\$ —4537.01	\$ —4458.61	\$ —3976.89	\$ —2859.53	\$ —1212.64	\$ 1082.95

CASH FLOW DEVELOPMENT BUDGET

Planting Density — 450 trees/hectare

Expenses/Hectare	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8
Land preparation	85.20	—	—	—	10.88	—	—	—
Weed Control — Herbicide and Cultivation	32.64	62.39	62.39	52.47	99.10	68.21	68.21	68.21
Planting Material and Planting Out	1762.50	—	—	—	—	—	—	—
Irrigation Costs	38.00	38.00	51.00	51.00	63.00	63.00	63.00	63.00
Pest and Disease Control	14.10	37.20	27.90	49.12	100.85	128.30	155.75	169.45
Nutrition	26.21	45.52	51.33	85.31	102.10	125.21	129.35	131.42
Harvest — \$18/tonne	—	—	—	45.00	162.00	288.00	405.00	522.00
Cartage — \$5/tonne	—	—	—	12.50	45.00	80.00	112.50	145.00
TOTAL	1958.65	177.67	192.62	295.40	582.93	752.72	933.81	1099.08
Income/Hectare								
Tonnes per hectare	—	—	—	2.5	9.0	16.0	22.5	29.0
Gross Income per hectare (\$100/tonne)	\$ —	\$ —	\$ —	\$ 250.00	\$ 900.00	\$ 1600.00	\$ 2250.00	\$ 2900.00
Total Expenses/hectare	\$ 1958.65	\$ 177.67	\$ 192.62	\$ 295.40	\$ 582.93	\$ 752.72	\$ 933.81	\$ 1099.08
Annual Surplus/Deficit	\$ —1958.65	\$ —177.67	\$ —192.62	\$ 45.40	\$ 317.07	\$ 847.28	\$ 1216.19	\$ 1800.92
Cumulative Surplus/Deficit	\$ —1958.65	\$ —2136.32	\$ —2328.94	\$ —2374.34	\$ —2057.27	\$ —1209.99	\$ 106.20	\$ 1907.12

In Airblast Sprayers, Silvan is Clearly the Leader

GRIFFITH FIRM APPOINTED AGENTS FOR SILVAN

Silvan Tractors and Implements have announced the appointment of A & G Industries at Griffith as the Riverina Agents for the Silvan range of Orchard and Vine Sprayers, Tractors and other farm implements.

A & G Industries are situated at Lenehan Road, Griffith, and are on the phone at (069) 62 1422.

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Silvan Pumps and Sprayers (Aust.) Pty. Ltd. has clearly established itself as Australia's leader in sales of airblast sprayers.

This status has been won in the face of early doubts of the acceptance of the variable pitch fan.

However, it has proved an important catalyst in stimulating orchardists to use Silvan airblast units.

The Varipitch fan offers an infinite variety of adjustments to make it suitable for almost every orchard and vineyard spraying task.

Not only can it be adjusted to make maximum use of available tractor horsepower without overloading, but can be attached to much lower horsepower tractors than normal for the size of unit.

When using a Varipitch fan, allowance can be made for tractor condition, orchard topography, soil conditions or any other factor affecting the effective tractor power available.

The Varipitch has overcome one of the major objections in citrus spraying — the cumbersome oscillating boom. Field tests and sales have indicated that this is now well and truly superseded by the Varipitch one-sided citrus sprayer.

A new clip on the Varipitch fan side conveyors allows sprayers to be converted from double to single side — or vice versa — in five minutes.

In grapes, the Varipitch fan has proved its wide versatility. When vines are very young and tender, spraying can be done without damage by adjusting jet pressure, by reducing the number of jets in use by adjusting the variable pitch fan — even to the point of switching it to neutral.

Charts are available from Silvan giving precise details of per acre performance at the various combinations of adjustments. Spray tables for orchards and vineyards are now being backed-up by the use of a computer.

Silvan is able to supply print-outs for individual growers providing fully detailed programmes for their spray operations. They are based on data provided by the customer — tree size and spacing, row width, etc.

Among important airblast developments at Silvan is the availability of a higher volume pump and larger fan on linkage airblast sprayers.

The thirty-two inch, nine blade fan and AZ90 pump (21 g.p.m. at 710 p.s.i.) pump combine to provide capability for the biggest trees and thickest foliage.

The 110 gallon (500 litre) linkage sprayer is ideal for use in orchards on terrain where it is difficult to take trailed sprayer units.



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A new "flick-of-the-wrist" nozzle from Silvan provides airblast sprayer users with an alternative fitting offering simple high and low adjustment.

The Silvan Flipover Nozzle, equipped with a 1 inch male pipe thread, switches to low volume, dilute strength or off by simply turning the nozzle to the desired position.

The Flipover Nozzle uses tee-jet parts which are interchangeable with many other makes and require no special ceramic discs and whirls, thus keeping cost to a minimum.

The new nozzles come complete with caps, whirls and discs — or body assembly.

For further information contact—Silvan Pumps & Sprayers (Aust.) Pty. Ltd., 2-4 Douglas Street, Sth. Melbourne 3205. Tel. (03) 699 3777.

New Citrus Budwood Scheme for Queensland

By Keith Jorgensen, Senior Horticulturist, DPI, Maryborough, Qld.

The current citrus budwood scheme has been operating in Queensland since 1931 which makes it one of the earliest budwood schemes in the world.

The success of the scheme is evident in Queensland orchards of today.

The trees are high producing with very few off-type fruit and they are completely free from psorosis virus which was becoming a serious problem in the 1930s.

Other problems have also been kept under control, including exocortis and xyloporosis and an incompatibility condition in Joppa oranges which causes some strains to decline on rough lemon stock.

Under the current scheme, budwood is cut by departmental officers from selected blocks of trees on commercial orchards.

Two categories of budwood are supplied:

- (1) a standard commercial quality, and
- (2) a special exocortis-free quality.

Exocortis viroid causes severe dwarfing and bark scaling on trifoliata stock and mild dwarfing on Troyer citrange.

Budwood free from exocortis has to be used on these stocks.

This budwood is cut from mature trees on trifoliata stock which are free from scaly butt and dwarfing symptoms.

Exocortis has also been called Scaly Butt.

It is caused by a viroid which is an organism similar to a virus but lacks a protein coat.

Unfortunately, the number of trees on trifoliata stock in Queensland is limited.

Growers are also starting to eradicate them because of their salt susceptibility

so the supply of budwood is reducing.

At the same time, the demand for exocortis-free budwood is increasing because of the greater use of Troyer citrange as a replant stock.

A new budwood scheme is therefore being organised to provide an assured supply of budwood which is free from exocortis and also free from psorosis, xyloporosis, greening, stubborn, vein enation and crinkly leaf viruses.

The budwood could still contain tristeza and stem pit viruses which are transmitted by aphids and cannot be kept out.

The new scheme involves the establishment of special budwood mother blocks using trees propagated from top quality budwood lines which have been indexed free from all possible viruses.

These mother blocks will be grown as commercial orchard trees so that their yield and fruit quality can be checked, but they will be isolated from infection with mechanically transmitted viruses such as exocortis.

Planting of these blocks started in 1978 and there are now 600 mother trees planted on the property of Mr. K. McCauley at Mundubbera, and 380 trees on the property of Messrs. J. N. and E. M. Smith at Gayndah.

Further trees are being propagated by the Department of Primary Industries at Gayndah.

Under the new budwood scheme, the cutting and despatch of budwood will be in the hands of private enterprise rather than the Department of Primary Industries as at present.

The orchardists who are responsible for growing the mother tree blocks will also organise the supply of budwood to nurserymen according to the orders they place with the Budwood Committee.

The new scheme is under the overall control of the Queensland Citrus Budwood Committee which includes these representatives of the following bodies:

Queensland Nurserymen's Association—Mr. D. Obrist.

Citrus Sectional Group Committee of the COD—Mr. R. L. Baker.

COD Management—Mr. H. Bedney.

Plant pathology branch, Department of Primary Industries—Dr. J. Dale.

Horticulture branch, Department of Primary Industries—Mr. K. R. Jorgensen (Chairman).

This committee is responsible for all matters concerning the supply of citrus budwood under the new scheme including selection and maintenance of sources of supply, methods of supply, prices to be charged and quality standards.

All bookkeeping and receipt of budwood orders will be handled by the COD which attends to the accounts for the current scheme.

It will take some years, however, before the newly planted mother blocks are mature enough to supply buds.

In the meantime, citrus budwood should continue to be ordered from the officer in charge of the current scheme, Mr. J. Owen-Turner of the Department of Primary Industries at Gayndah.

—"Queensland F. & V. News",

PRIVATE SALE

36 ha. (90 acres) TOCUMWAL CITRUS PROPERTY

Present owners (Curtis Scott family) since 1936. Almost completely planted bearing citrus under permanent spray irrigation direct from Murray River (el. motors & 5/6" Thompson pumps and virtually salinity free).

As new export licensed 90' x 40' packing shed, large older packing shed, new machinery shed, bulk grader, automatic 32 bin de-greener, 2 small cottages.

Lacks main house but superb site exists with views along sweeping bend of river and sandy beach (picture shown) for residence of your choice.

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Development Costs for M.I.A. Citrus

(Continued from page 7)

Therefore the price per tonne figure used in these budgets is an average of the F.I.S.C.C. and 'general' price achieved for processing valencias in this area.

PRESENT MARKETING SCHEME

In March, 1979, the Government disposed of an ad valorem 65 per cent duty and adopted a new scheme. Under this scheme, imported orange juice is now taxed using price for the f.o.b. value of imported orange and mandarin juices was established. Whenever the f.o.b. value of imported juices falls below \$2.40/kg of total soluble solids content, a taxable duty is imposed to increase the figure to \$2.40/kg.

This system should offer the industry a stable environment in which the industry may operate. The scheme will be in operation until 1982 when it is due for review. While this scheme is in operation, Australian citrus producers are free from the effects of severe fluctuations of overseas fruit prices. Should you require a copy of the full publication analysing the costs and returns for both plant densities, write to:

Regional Director of Extension,
N.S.W. Department of Agriculture,
P.O. Box 540,
LEETON, N.S.W. 2705.

Fresh Citrus Exports

JUNE SUMMARY

AUSTRALIAN FRESH FRUIT EXPORTS BY STATES (Tonnes)

	QLD.	N.S.W.*	VIC.*	S.A.	W.A.	TOTAL
Grapefruit	52.6	—	0.5	—	—	53.1
Lemons	4.1	1.9	3.0	12.6	30.6	52.2
Limes	0.1	—	—	—	—	0.1
Mandarins	1,558.1	16.5	8.4	0.1	—	1,583.1
Oranges	33.0	4.8	338.2	2,066.3	1.4	2,443.7
	1,647.9	23.2	350.1	2,079.0	32.0	4,132.2

* Vic./NSW Border Districts.

AUSTRALIAN FRESH FRUIT EXPORTS BY DESTINATIONS (Tonnes)

	G-fruit	Lemons	Limes	M-rins	Oranges	Total
PNG and Solomon Islands	0.8	3.7	—	12.0	48.9	65.4
Pacific Islands	0.8	1.6	—	1.2	27.4	31.0
New Zealand	51.4	—	—	—	1,830.3	1,881.7
Singapore	—	40.1	—	22.5	123.3	185.9
Malaysia	—	3.2	—	—	105.9	109.1
Indonesia	0.1	0.5	0.1	17.8	10.3	28.8
Philippines	—	3.0	—	—	0.4	3.4
Hong Kong	—	—	—	1.8	—	1.8
Saudi Arabia	—	—	—	549.2	—	549.2
Kuwait	—	—	—	68.5	—	68.5
Bahrain	—	0.1	—	3.3	110.0	113.4
U.A.E.	—	—	—	3.2	0.7	3.9
Canada	—	—	—	684.7	—	684.7
Sweden	—	—	—	172.1	—	172.1
Norway	—	—	—	46.8	—	46.8
Holland	—	—	—	—	186.5	186.5
	53.1	52.2	0.1	1,583.1	2,443.7	4,132.2

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River Murray Commission Storages, Diversions and Water Supply

JULY SUMMARY

STORAGES	Capacity Megalitres	Week ending 30-7-80 Megalitres
Hume Reservoir	3,038,000	1,147,000
Lake Victoria	680,000	667,000
Menindee Lakes	1,794,000	1,218,000
Dartmouth Reservoir	4,000,000	1,762,000

WATER FLOWING TO SOUTH AUSTRALIA

Week ending 30-7-80	58,000
Monthly entitlement for July	109,000
Total for July to 30-7-80	153,000
Total for June	87,000

WATER QUALITY

(Average quality for week — total dissolved solids in parts per million)

	25-7-79	30-7-80
Swan Hill	215	197
Euston	127	157
Red Cliffs	245	181
Merbein	260	210
Lock 9	166	234
Lake Victoria	242	276
Berri	269	480
Walkerie	436	564
Mannum	360	660
Murray Bridge	338	630

— (Extracts from River Murray Commission Reports).

**MELBOURNE
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MERCHANTS**

Fruit Growing Industry (Federal) Award Wage Rate Schedule

From the beginning of the first pay period to commence on or after 14 July, 1980.

In accordance with the decision of the Australian Conciliation and Arbitration Commission in the National Wage Case, the rates of pay in this award are adjusted as follows:

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Footscray**

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Telegraphic Address: FRUITREP, Melb.
Box 555D, Melbourne

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**Store 307, Wholesale Fruit Market
Footscray**

Phone: 68 2240
Telegraphic Address: DAVIS, Melbourne
Box 148D, G.P.O. Melbourne

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The Committee of Direction of Fruit Marketing
Store 211-217, Market "C"
FLEMINGTON MARKETS N.S.W. 2129
Telephone: 764 3299
Telegrams: "Fruitrep", Sydney

N. & A. Fruit Distributors Pty. Ltd.
Stores 35, 36 and 37
"A" Market, Sydney Markets
FLEMINGTON, N.S.W. 2129
Telephone: 764 3622

Mitchell and Hall Pty. Ltd.
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John Jenkins Pty. Ltd.
Stores 1-4, Market A, Flemington Markets 2129
Telephones: 764 3489, 764 3383

Associated Growers' Selling Agency
FLEMINGTON MARKETS, N.S.W. 2129
190 "B" Shed

MALES AND FEMALES

No. Classification

	Old Rate Per Week	Increase Per Week	New Rate Per Week
1. Fork Lift Truck Driver	150.30	6.30	156.60
2. Motor Lorry Driver	150.30	6.30	156.60
3. Tractor Driver	147.10	6.00	153.10
4. Employee engaged in sorting, grading, and/or packing fruit	138.70	5.80	144.50
5. GENERAL HAND—Class 1 An employee who performs work of any of the following classifications: Sweat lumpers, maintenance worker in charge of machinery, concrete worker and/or rack builder, trelliser, box maker by hand, boiler attendant, furnace attendant	147.10	6.00	153.10
6. GENERAL HAND—Class 2 (i) An employee who performs general duties as directed other than those elsewhere specified herein (ii) An employee who performs general duties as directed other than those elsewhere specified herein and who has been continuously employed by an employer for at least two years	143.80 147.10	6.00 6.00	149.80 153.10
7. LEADING HAND (i) In charge of 2 to 6 employees (ii) In charge of 7 to 10 employees (iii) In charge of 11 to 20 employees (iv) In charge of over 20 employees A leading hand shall mean an employee appointed to be in charge of and to supervise the work of other employees.	7.40 8.00 12.30 16.00	0.30 0.30 0.50 0.70	7.70 8.30 12.80 16.70

JUNIOR EMPLOYEES.

(a) The minimum wage payable to junior employees shall be the undermentioned percentages of the weekly adult wage rate for the classification under which they are employed.

	Percentage of the Weekly Adult Wage Rate
1. In Orchards and Vineyards:	
At 15 years of age	50
At 16 years of age	60
At 17 years of age	70
At 18 years of age	80
At 19 years of age	90
At 20 years of age	100
2. In Packing Houses, Cool Stores and Dehydration Plants:	
At 15 years of age	50
At 16 years of age	70
At 17 years of age	80
At 18 years of age	100

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Comprising 163 Hectares of which 115 Ha are planted to citrus and irrigated from the River Murray via 3 turbine pumps with 75 h.p. electric motors. A further 26 Ha are planned for planting and irrigating. The water licence is sufficient to cover full development.

Plantings commenced in 1960 and consistent close plantings have been made each year, totalling 61,376 trees, using sweet orange root stocks and buds from the best parent trees.

A commercial nursery is maintained to supply trees for substantial outside sales as well as "Solora's" own plantings.

Accommodation includes two Managers' Residences, 3 houses for permanent staff, 2 smaller houses and its own 16 site caravan park with facilities for casual employees.

Included in the sale will be a full working plant of 12 tractors, light truck, utility, motor cycles, spray plant, tree trimmers and other necessary plant for all cultural and harvesting operations.

A Commercial Packing licence issued by the Citrus Organisation Committee is held for all varieties of citrus. Brand names and market connections will pass to the purchaser.

Handling and marketing of citrus is carried out from a large packing shed/office complex adjacent to the Orchard and highway, with facilities for packing up to 150 x 30 litres per hour. A further storage shed and workshop serve the fruit growing area.

"Solora" is an outstanding property, with long experience and expertise of management and has an excellent record of production, distribution and financial returns, particularly considering that only half the property is in significant production. It is expected that within the next few years production will more than double with only a very small increase in operating costs, thus making it an even more attractive business proposition.

Priced at \$1,850,000 which includes plant, brand names, licences, market connections, nursery stocks, plus value of crop on trees at date of possession. Present Management and Staff could continue by arrangement.

A rebate of 25% of the commission will be paid to any Licensed Agent introducing a buyer and making settlement.

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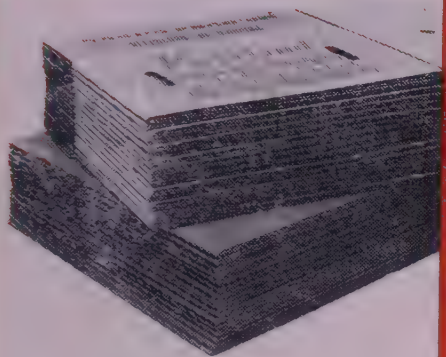
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AP127

EDITOR'S NOTE

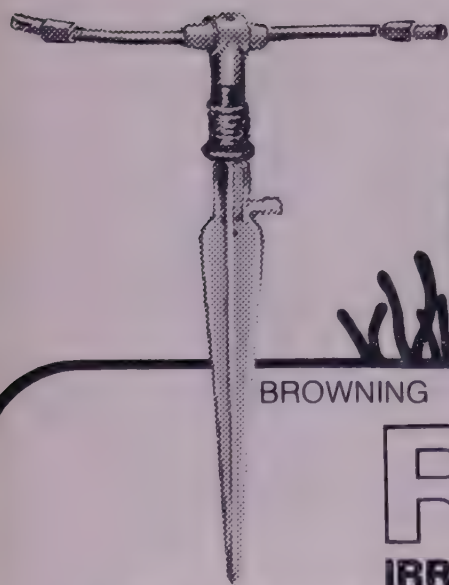
With the calling of nominations for the four grower positions on COC in South Australia, citrus growers in that State have a big responsibility to undertake in the coming weeks.

The words of the president of Murray Citrus Growers Co-operative Association, and vice-president of ACGF, Mr. Peter Nicholas, are appropriate to the occasion:

(Continued on page 3)

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the official organ of
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CENTRAL COAST CITRUS GROWERS'
ORGANISATION

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Telephone: 25 0247 (STD 043)

Chairman: A. Unitt

Secretary: F. Walpole

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CITRUS FRUIT MARKETING BOARD

Chairman: A. Fisher

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INDUSTRY DOINGS

NEW PRESIDENT OF PROCESSORS ASSOCIATION

Mr. Bill Korallis, the General Manager of Berri Fruit Juices Co-operative Ltd., South Australia, has been elected President of the Australian Citrus Processors Association.

He takes over from the retiring President, Mr. Ken Nugan, of Griffith, N.S.W.

EXPORT AWARD TO GOLDEN MILE ORCHARD

A special award has been given to the Golden Mile Orchard at Mundubbera, Queensland, for its contribution to Queensland's exports in the 1979-80 season.

The award, consisting of a plaque and a cheque for \$500, was made by the Queensland State Export Action Committee and was presented to the Company's Managing Director, Mr. Jack Parr, by the Deputy Premier of Queensland, Dr. Edwards.

In the 1979-80 season, the Golden Mile Orchard exported over 327,000 cartons of citrus fruits, which was almost 55 per cent of the Company's total production.

A special plaque was also presented to the Company's Export Manager, Mr. Jack Blick, for his part in the project.

ELECTIONS FOR C.O.C. MEMBERS

The S.A. Minister of Agriculture, Mr. Chapman, has advised that he intends to call an immediate election for the four grower members of the Citrus Organisation Committee of South Australia.

The Electoral Commissioner for S.A. has advertised for nominations for the four seats and nominations close on 6th October.

All S.A. citrus growers should ensure that they are enrolled as registered growers to have entitlement to vote in the poll.

It is anticipated that the new Committee will be installed on November 12.

RETIREMENT OF L. E. RIPPON

Mr. L. E. Rippon has retired from his position as Officer in Charge at the Gosford Horticultural Postharvest Laboratory in N.S.W.

Ern Rippon started his professional career in 1942 and has had a long association with food research activities.

He joined the laboratory in 1971 and since that time has worked on postharvest problems of citrus, bananas, strawberries and other fruits. He was responsible for the development of many new postharvest

treatment practices which have now been accepted as standard procedures.

A.C. News extends best wishes to Ern for a long, happy and healthy retirement.

PETER FISHER APPOINTED N.C.P. WHIP

Mr. Peter Fisher, the Federal Member for Mallee in Victoria, was recently appointed Whip of the National Country Party in Federal Parliament.

As Whip, Mr. Fisher is Secretary of the parliamentary party with responsibility for arranging committee and party meetings, N.C.P. speakers in parliamentary debates and acting as a teller for voting divisions in the House of Representatives.

BAN ON GROWER SALES — MELBOURNE MARKET

A ban on citrus growers selling their products, other than lemons, at the Melbourne Wholesale Fruit and Vegetable Market will come into effect from Wednesday, October 1.

From that date the citrus can only be sold by wholesale from stores operated by licensed wholesalers.

A determination by the Melbourne Wholesale Fruit and Vegetable Market Trust was originally to operate from July 1 this year, but the move was deferred on instructions from the Victorian Minister of Agriculture, Mr. Smith.

EDITOR'S NOTE

(Continued from front page)

"It is vital for the citrus industry of SA that growers should vote in the elections and maintain a strong grower orientated committee to ensure a responsible and fair approach by COC.

"The new committee will need to comprise experienced men with an understanding of how the industry should operate to satisfy all sections of the citrus industry."

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CITRUS COUNCIL ELECTS PROCESSOR AS PRESIDENT

The Australian Citrus Industry Council has elected Mr. Bill Korallis chief general manager of the Berri Fruit Juices Co-operative Ltd., at Berri, South Australia, as president of the Council for 1980/81. Mr. Korallis is also chairman of the Australian Citrus Processors Association.

The council was established earlier this year to provide a national industry forum for the consideration of all matters concerning the Citrus Industry.

Member organisations are the Australian Citrus Growers Federation, representing commercial growers of citrus fruits in Australia; the Australian Citrus Processors Association, representing processors of citrus fruits; and the Australian Fruit Juice Association, representing that section of the industry involved in converting citrus juice concentrates to a single strength consumable product for distribution to the market.

The inaugural president of the Council and chairman during the formation stages was Mr. John Darnley Naylor of Leeton, NSW, representing the Australian Citrus Growers Federation.

Mr. David Wade, president of the Australian Fruit Juice Association and representing Sun Pak Fruit Juices Pty. Ltd. of Sydney, has been elected vice-president of the council. Mr. Harry Walker, of Mildura, president of the Australian Citrus Growers Federation, is the third executive member and Mr. Hugh Cope, general secretary of the Australian Citrus Growers

Federation, has been re-elected as secretary.

President's Report

In his annual report the retiring president, Mr. Naylor, said the establishment of the council had been well received at all levels of industry and government and considerable progress had been made in creating goodwill and a closer liaison between the component sections of the industry.

He said these factors would enable the council to play an important role in dealing with the challenges which will face the industry from time to time in the future and in matters related to the longer term prospects and trends of the industry.

Imports

The council's annual meeting gave detailed consideration to the preliminary statistics of import clearances of orange juice during the 1979-80 year, which showed that clearances of this product necessary to meet the requirements of the Australian market, if the figures are correct, had been the equivalent of about 118,000 tonnes of oranges.

The Council expressed some concern over apparent anomalies in the statistics relating to the administration of the variable tariff arrangement applicable to orange juice and will continue to monitor the statistics and pursue this question.

In this respect the Council welcomed the recent announcement by the Federal Treasurer that, as from July 1, 1980, kilograms, total soluble solids are the unit of quantity for customs administrative and statistical purposes.

This amendment in the identification and recording of imports of orange juice had been requested by the industry as a means of helping to overcome any apparent anomalies in the system.

Statistics

An important decision taken by the Council's annual meeting was aimed at improving the availability and accuracy of industry statistics.

The council is to take up with the State Departments of Agriculture and primary industries the question of improving planting statistics, crop forecasts and crop production figures for the citrus industry.

An approach is to be made to the Australian Fruit Juice Association requesting quarterly information on a State and varietal basis of retail sales of citrus juice products in three categories—concentrates, single strength juices and fruit juice drinks.

The council also agreed to request the Australian Citrus Processors Association to provide information on the quantities of citrus fruits processed in each State; the stocks of single strength juice equivalent on hand at a given time each year; the production of citrus oils and employment in the industry.

The Australian Bureau of Statistics is also to be requested to provide additional information on the production of natural citrus juices in Australia and on the per capita consumption of citrus fruits and processed citrus products.

The decisions on statistics resulted from recommendations made by the council's statistics sub-committee.

Market Research

Following on consideration of a report from the council's market research and promotion sub-committee, the council resolved to support the need for adequate market research in order to establish the basis for future promotional activities by the industry.

The council agreed to investigate the possibility of linking in a market research project on citrus juices and other processed products with a proposed project currently under consideration by the statutory citrus marketing boards at Mildura and in South Australia for research directed at consumer attitudes to fresh citrus fruits.

The council also intends to check out the availability of market research findings on citrus fruits from the other States.

Vitamin C

The council has reaffirmed its policy that the manufacture and sale of vitamin C supplements in a powdered form should be made subject to State food regulations instead of being subject to specific acts which enable the products to be classified as medicines or drugs.

The annual meeting noted the progress made following on industry deputations to the respective State Ministers of Health in Victoria, NSW, South Australia and Queensland requesting support for this policy.

The council particularly noted the advice received from the office of the Victorian Minister of Health that as from July 1, 1981, the Minister would exercise his power to cancel the registration of the vitamin supplement products which are currently registered under the Victorian Health (Proprietary Medicines) Act.

The council agreed to make further industry representations to the National Health and Medical Research Council to ensure that in any amendment of the standard food regulations for soft drink bases in powder or solid form in order to accommodate the said supplements, the addition of vitamin C to these soft drink bases continue to be not permitted.

Affiliations

The council agreed to seek membership as a kindred organisation of the Council of Australian Food Technology Associations.

Delegates considered it was essential for the council to be affiliated with this body in respect to matters concerning standards and other technical aspects of the citrus industry and its products.

September, 1980

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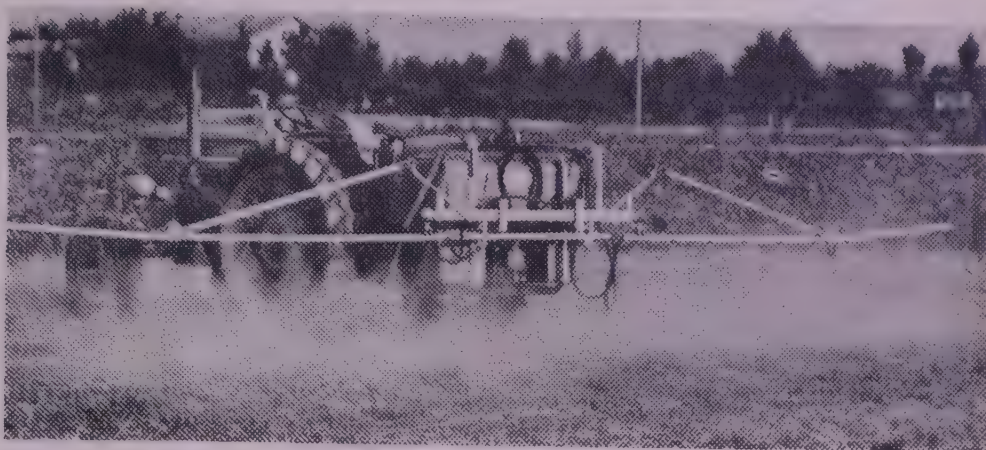
Pamphlets and further information
available. Trade enquiries welcome.

TEN COMMANDMENTS FOR CITRUS MARKETING

- (1) This is the First Commandment. It is the Law of the Profits that good markets exist only where Demand goes ahead of Supply. Therefore, build Demand, and yet more Demand, for your citrus fruits.
- (2) And the Second Commandment is like unto the First: Teach your customers diligently the merits of citrus; for only a fool buys that for which he knows no use. Prepare the market carefully in advance; for education costs only cents per box, but the price of ignorance is in dollars.
- (3) A thousand growers shall not attempt to sell their citrus fruit to seven buyers; for verily the growers will cut each others' prices to pieces and the buyers will wink and laugh. But seven sellers and seven buyers make a firm market and fatten the pocket book of all.
- (4) He who sells by under-cutting his neighbour's price has thrown a boomerang which will return to smite him. His neighbour shall cut in his turn and both will be sorely wounded in the hip pocket.
- (5) You shall not attempt to market a puny volume of citrus, for the seller of a million boxes attracts the hard-cash buyers, but the push-cart pedlar must hunt the by-ways and alleys for a bad-cheque customer.
- (6) Unless you are a professional salesman as well as a grower, hire yourself a salesman; for the amateur cannot compete equally with the professional, and the buyers of citrus fruits today are surely professionals.
- (7) Guard diligently against overfilling the nearby markets, for a glut ruins the price level and the blight speeds by telegraph over land and sea. Offer your citrus fruits to many cities for citrus fruits grow only in certain spots of this terrestrial ball, but all the people of all nations hunger for fruit.
- (8) Strive mightily for a stable market, for therein the merchant buys tomorrow's needs freely and with confidence. But when the price cutters enter, the merchant withholds buying lest his competitor buys cheaper or tomorrow's fruit be lower; and the unsold citrus fruits pile up like a dammed river, unto the bursting thereof.
- (9) An honest grade is a delight to all merchants and brings re-orders; but a deceitful or a sloppy pack induces wrath and rejection.
- (10) Forget not that the eye controls the purse strings; that bruises are repulsive and poor fruit looks shabby; and that your citrus fruits must sell themselves alongside 70 other fruits and vegetables.

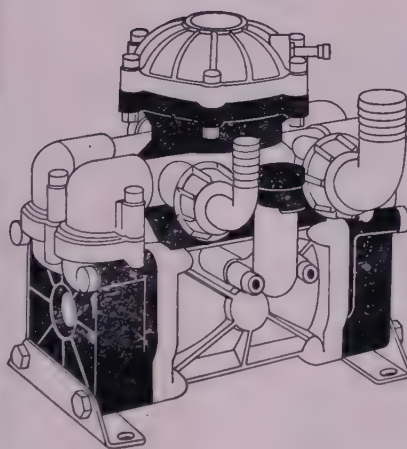
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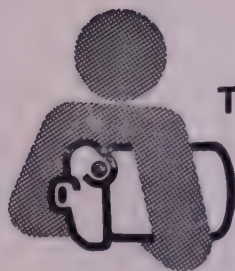
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PRIMARY INDUSTRY AND THE 1980-81 BUDGET

The Minister for Primary Industry, Mr. Peter Nixon, has described the Federal Government's 1980-81 Budget as providing a firm basis for the continued viability and prosperity of the Australian primary industry.

Mr. Nixon said that the major thrust of the Budget was to continue responsible economic management and contain inflation.

"With our dependence on world markets for a large proportion of our rural returns", he said, "this sound economic approach is vital to Australia's primary producers.

"The Government's success to date in containing and reducing inflation has been a major factor in Australia's increased competitiveness on world markets. This is reflected in the fact that total rural exports in 1980-81 are expected to rise by 6 per cent, or \$500 million, to a new record of \$9,100 million."

Mr. Nixon said that with a \$27.4 million balancing adjustment for the sugar industry under an International Monetary Fund loan arrangement, the direct outlay in the Budget for assistance to the agricultural and pastoral industries was estimated at a total \$167.2 million, and for the forestry and fishing industries, \$6.1 million.

"The Government's policy," he explained, "is to provide assistance to individual industries on a needs basis, and the continuing strength of the rural sector is

reflected in reduced calls for assistance from the Government".

Mr. Nixon said that while the Government was committed to containing public expenditure, he was pleased that it had been possible to increase appropriations in some important areas for 1980-81.

Increases

These included:

- An increase of \$6 million for wool promotion, from \$14 million in 1979-80 to \$20 million.
- An increase of \$2.1 million for wool research, to \$7.1 million for 1980-81.
- Extension for a further 12 months to the end of December 1981 of the \$20 per tonne nitrogenous fertilizers subsidy, at a cost of \$5 million.
- \$17.7 million set aside for assistance under the Rural Adjustment Scheme, compared with expenditure of \$15.6 million in 1979-80.
- An increase of \$1 million over 1979-80 for fisheries research, promotion, development and administration of the 200-mile Australian Fishing Zone.
- Net outlays for cattle disease eradica-

tion and compensation payments estimated to increase from \$2.5 million in 1979-80 to \$3.4 million.

- Net outlays on meat export inspection and animal health services estimated at \$21.7 million, compared to \$18.4 million in 1979-80.
- An increase of \$1 million to \$6.7 million for export inspections of grains, wool, fruits and other exports requiring quality certification.
- Funding for the Commonwealth Extension Services Grant to be retained at the same level as 1979-80, \$5 million.

Concession

Mr. Nixon said that a new taxation concession would be available for four years from 1st July, 1980, to allow immediate write-off of expenditure on sub-



Mr. Peter Nixon

divisional fencing and stockyards which is certified by disease eradication authorities as being essential to control livestock for brucellosis and tuberculosis eradication.

The cost of the concession was estimated at \$200,000 in 1980-81, and \$3.8 million in 1981-82.

"The principal purpose of the concession," he said, "is to encourage beef producers in areas where control of livestock is difficult to undertake a brucellosis and tuberculosis eradication programme.

"The concession will be of particular importance to producers in northern and central Australia," Mr. Nixon said.

The Government would continue its policy of reimbursing the Australian Wheat Board for borrowing expenses associated with commercial loans.

(Continued on page 7)

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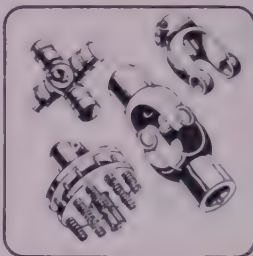
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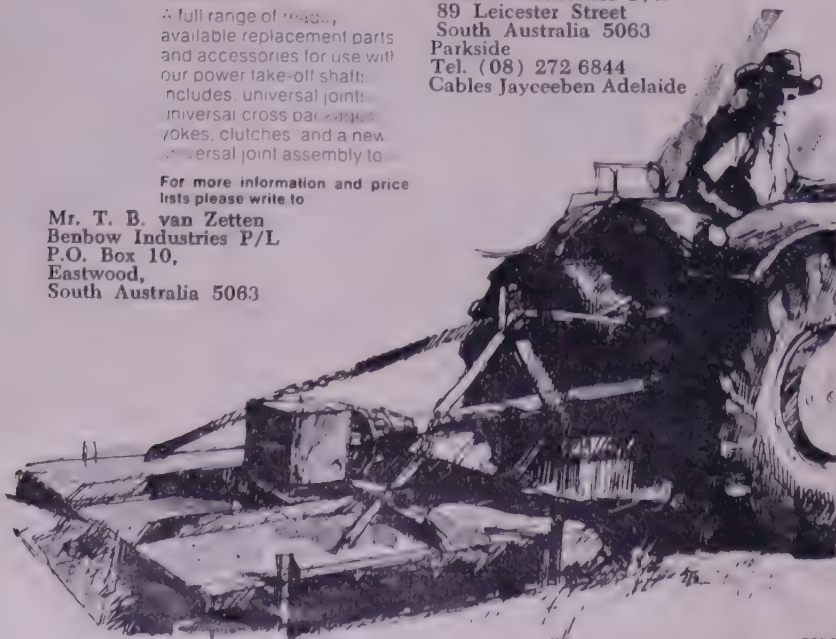
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PRIMARY INDUSTRY AND THE 1980-81 BUDGET

(Continued from page 6)

He said outlays for 1980-81 were expected to be over \$28 million, compared with \$7.7 million in 1979-80. This was a reflection of the substantially increased availability of wheat for export.

Benefits

In addition to these specific allocations, he said, primary producers would continue to benefit through schemes such as the wool floor price, which had been set at 365 cents per kilogram clean for the 1980-81 season, and the 20 per cent increase in the dairy underwriting level to \$2.10 per kilogram butterfat at the farm gate for the 1980-81 season.

Furthermore, the primary industry sector would benefit from the Government's continuing efforts to reduce inflation, and from special programmes such as the Income Equalisation Deposit Scheme — on which interest rates had recently been increased from 5 per cent to 7 per cent — special taxation provisions, and the Fuel Freight Subsidy Scheme, which would benefit people in country areas by over \$120 million in 1980-81.

"Also," he said, "increases have been budgeted for in 1980-81 in the allowances payable for children of isolated families attending boarding schools, and for benefits paid to people who care for chronically ill or disabled relatives or other people in their own homes, who would otherwise need nursing home care.

"Improved benefits are also to be provided under the Isolated Patients' Travel and Accommodation Assistance Scheme, which helps people living in isolated areas to obtain specialist medical treatment."

Government Decision on Tariff Protection — Citrus Oils

The respective Ministers for Business and Consumer Affairs and Industry and Commerce have now announced the Commonwealth Government's decision following the IAC Inquiry into the matter of assistance accorded to industries involved in the manufacture of certain chemical products.

With few exceptions the Government has accepted the Commission's recommendations on the goods under reference for duties ranging from minimum rates to 30 per cent ad valorem.

Of particular interest to the Federation is the question of citrus oils — an increasingly important by-product of the citrus processing industry.

The Government has decided that the General Rate of tariff on all citrus oils will be 10 per cent and that imports from Developing Countries and New Zealand will be at minimum rates.

This compares with the current general rate tariffs of 15 per cent on lemon and orange oil and 7½ per cent on other citrus oils; and a Developing Country tariff of 5 per cent on lemon and orange oil and no tariff on other citrus oils.

Although the general tariff rate on lemon and orange oil has been reduced, of vital importance in the Government's decision is that Brazil, classified under the

General Agreement on Tariffs and Trade as a Developing Country, will be excluded from the Developing Country preference on orange oil and imports of that product from that Country will now be subject to a tariff of 10 per cent, which represents an increase in duty.

A.C.G.F. submitted evidence to the I.A.C. Inquiry requesting that the levels of tariff remain unchanged from the present rates and made a strong case for the exclusion of Brazil from the Developing Country preference arrangements.

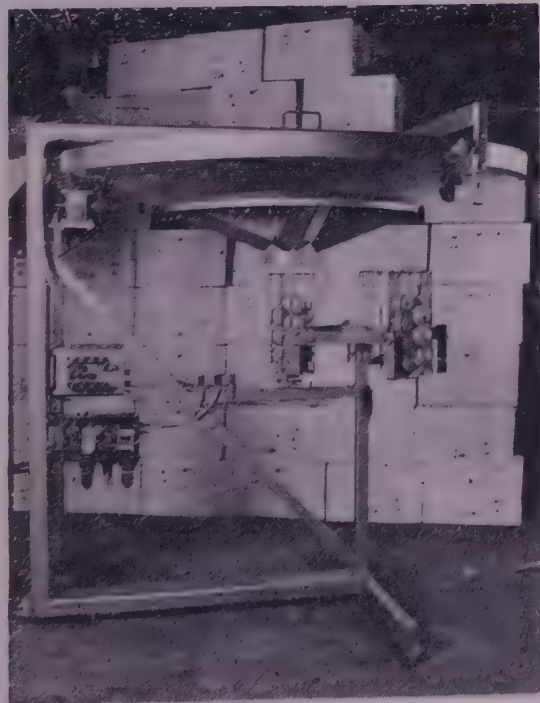
The evidence to the I.A.C. on the latter point was also backed up by detailed submissions to Ministers of the Government. In these submissions it was pointed out that Brazil is the second largest citrus producing country in the world, with well over half a million hectares of citrus plantings and an annual production of over 7 million tonnes of citrus. During the year 1978-79 imports of orange oil from Brazil represented 48 per cent of the total orange oil imports.

The submissions stressed the anomalous situation of Brazil being granted "Developing Country" status on citrus products.

The Government's decision is therefore welcomed and should encourage our citrus processors to further develop their oil extraction activities.

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Time to Re-think Labour Use on Farms

By ROB NAPIER, Principal, Orange Agricultural College, Orange, N.S.W.

Labour utilization continues to be of great importance to the well-being of Australia's rural industries.

Labour management is seen as a topic of great relevance among farmers and farmers have widely varying attitudes to management of time—it is a very personal thing.

There are a few indisputable facts about time—

- it can't be manufactured—believe me I've tried to prove this fact wrong!
- it is perishable—if it isn't used when available then it is lost
- man lacks a reliable sense of time—we aren't always conscious of where our time goes or whether we have ordered our priorities well.

Add to these factors the pressures on family farm businesses and we have great challenges ahead of us in effectively managing time.

What are these pressures? I'm sure you are only too conscious of them—the increasing proportion of family members in the farm work force, the spiralling cost of wages, insurance and “perks”, the relatively old age structure in some sectors of rural industry and, the biggest crunch of all, declining ability to pay for the costly services of labour.

But, if it is any consolation, we are not the only ones with these problems (even though we are in the unenviable position of having no-one to whom we can pass our costs).

Secondary and tertiary industries have many of the same pressures and have reacted in the only way possible by carefully examining their production systems and going flat out to improve their output per labour unit. In rural industry we must accept the challenge to do the same.

The Farmer's Labour Options—How Can We Achieve More From Each Type of Labour?

FAMILY MEMBERS

Industry trends are throwing us back more and more on the resources of the family in order to survive. The flexibility, resilience and reliability of the family work unit is the “ace card” of the family farm business. But in many family businesses the thinking and working abilities of the family members and the opportunities for leisure are not fully utilized.

As one involved in the training of young

people making a career on the land I am very conscious of the potential conflicts between generations within families and unhappy and unproductive situations which can arise through lack of attention to human relationships.

I want to consider each typical family member in turn and ask how we might achieve better work value as well as more satisfying relationships. It is a sensitive and personal area but most important that it not be swept under the carpet.

How to get more out of—DAD

- recognise the value of his experience and draw on it
- if Dad is over 50, look for less energetic ways of carrying out farm jobs, e.g., hitching implements, handling hay bales, etc.
- encourage him to treat family and employed labour as thinking as well as working beings
- encourage him to delegate responsibility
- encourage him to communicate his plans
- don't be a Dad-knocker—point scoring doesn't improve effectiveness
- use his contacts and rapport with people associated with the farm business
- remember he needs encouragement just like anyone else.

How to get more out of SON(S)

- don't kill his enthusiasm—give encouragement.
- give him some responsibility—remember he probably has a strong desire to prove himself and stand clear of the shadow of his father
- have a clearly communicated work plan so that conflicts with planned leisure activities can be reduced
- have clear inheritance and responsibility plans which are worked out before the son returns home—don't wait until problems arise
- don't treat him as slave labour—share out the interesting jobs but make sure he values the “perks” of board, use of farm vehicles, etc.
- encourage him to develop skills through every avenue available
- if he undertakes formal training don't knock him for having all theory and no practice
- recognise his needs for some freedom and privacy
- recognise that the son may not have the same interests and attitudes as Dad—don't try to put square pegs in round holes
- the key to successful human relationships is empathy—the ability to put yourself in other person's shoes—older people should remember they were young once!

How to get more out of MUM

- keep her informed—she is often in the best position to act as secretary to the farm business—if she is informed then she can solve many problems which arise during the day without spending time of other family members
- keep Mum involved in round table policy

discussions — recognise that she too works for the farm business—also she can often be a successful referee when conflicts arise

- give her a chance to develop some skills which can be used in the farm business, e.g. in the farm office
- give her clear job instructions—if you ask her to pick up some spare parts for the combine explain what you want—if you don't then you shouldn't yell at her when she brings the wrong parts home!
- encourage her to have an interest of her own, on or off the farm—remember job satisfaction is just as important for Mum as anyone else
- occasionally thank her for a nice dinner or a job well done!

How to get more out of DAUGHTER(S)

- daughters have wide-ranging roles in family businesses, from full-time active involvement to interest only in the family rather than the farm
- for those daughters wishing to be actively involved in the farm business most of the remarks made about sons apply
- for all daughters there should be clear inheritance and responsibility plans.

NON FAMILY LABOUR

All family farms need non-family labour at some time. The cash costs are usually high so it is important to carefully consider all the options.

How to get more out of

PERMANENTLY EMPLOYED LABOUR

Many of the comments relating to family members apply.

- communicate work plans—if staff know what is going on they can be used in a thinking capacity as well as a working capacity
- allow staff to contribute their own ideas
- develop a pride in the farm by taking staff to important sales, field days, etc., and introducing them to visitors as “Jo, he runs the cattle” rather than “Jo, he's my labourer”
- try to give staff a mix of jobs to reduce boredom and endeavour to mix heavy and light work
- give clear job instruction and encourage development of skills
- recognise work well done—the best and cheapest incentive can often be praise and encouragement

Permanently employed labour has the advantage of being regularly available (except for weekends, holidays and sickness) and of having some knowledge of the farm. But the cost per day worked can be high. A typical station hand costs (after wages, worker's compensation, insurance, house, meat, etc.) about \$10,000 per year. Under award conditions he is available for work on about 230 days. So, the cost per day worked is approximately \$43. It is therefore important that permanent labour be fully utilised. If this is not possible then alternative sources of labour should be considered.

CITRUS TREES FOR SALE

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Time to Re-think Labour Use on Farms

(Continued from page 8)

How to get more out of CASUAL LABOUR

Casual labour has the advantage of flexibility, but may not be available when needed or have sufficient knowledge of your property. If you can obtain good casual labour—

- give clear job instruction using aids such as maps, machinery manuals, etc.—casual labour is often not familiar with your farm and may waste time, need too much supervision or damage machinery unless clearly instructed.
- try to give some continuity of employment so good casual labour will remain available—co-operation between neighbouring farmers can be very useful in achieving this.

How to get more out of CONTRACT LABOUR

As costs of permanently employed labour and machinery rise the value of effective contract labour is likely to increase. Contract labour can be expensive on the basis of units of work done but it must be remembered that the contractor requires a margin for management and risk and also has to cover costs such as workers compensation, insurance and travel.

To improve effectiveness—

- clearly specify the job including mention of likely problems such as location of obstacles which might damage machinery
- be organised so that contractors are not kept waiting—if held up they will probably charge more next time
- remember contractors need continuity of work to spread overheads and keep costs down. Seek ways of making available as much work as possible in your district—co-operation can give you bargaining power as well as retain good contractors in your area.

How to get more out of NEIGHBOURS

A particularly valuable but often overlooked source of skilled, motivated casual labour is the neighbouring farmer who may have differing peak work load times or a property too small to fully occupy the family work force. Reciprocal or one-way arrangements can be made provided that negotiations are approached with tact and goodwill. The neighbouring farmer has particular advantages in being familiar with your district and in often being available in emergencies or during holidays.

How to get more out of PROFESSIONAL SERVICES AND AGENCIES

Yes, whether you regard them so or not, the host of people who provide services to your farm should be regarded as part of your thinking and working resources. Accountants, bankers, solicitors, consultants, stock and station agents and rural suppliers can all save or cost you time and so should be utilised as effectively as possible. Often the service costs just as much whether you use it or not.

To improve effectiveness—

- have material for accountants, bankers, etc., prepared so that you can spend most time on important issues
- pick the brains of service personnel by preparing a list of questions
- have them recognise the value of your time and that you also wish to use their time effectively.

SAVING LABOUR THROUGH MACHINERY

In attempting to reduce labour costs one of the logical steps is to look for suitable labour-saving machinery. For example, much of the expansion of large scale machinery in cropping areas has been in direct response to labour cost pressures.

For many farmers the often very large capital expenditure has been made on the basis of careful budgets and consideration of management issues. Taxation, maintenance and skills aspects of investments have been rationally taken into account.

There is a danger, however, in some cases that the full implications of investment in machinery have not been considered. The benefits of labour-saving machinery depend on the labour costs saved and the effect on overall farm profitability of the purchase.

Many properties achieve high labour productivity and profitability without large investment in capital equipment. Only those items of equipment which can be justified in the light of the overall management programme should be purchased.

As available capital becomes even more of a restriction on farm development it will become increasingly important to exhaust all the management options for saving labour before undertaking additional large expenditure on machinery. "Bigger is better" when applied to machinery is not necessarily the case.

TIME SAVERS, TIME WASTERS

This entire paper could easily be devoted to discussion of time savers and time wasters on the farm. In an attempt to save space and time, points will be listed with brief comment only.

TIME SAVERS

- record where your time goes so that poor allocation of priorities becomes apparent
- forward plan so that priorities are followed, requirements are on hand and jobs can be co-ordinated — planning helps improve timeliness
- communicate plans to family members and employed workers—include use of farm maps, notice boards, etc.
- in implementing plans—have clear job instruction build in flexibility to allow for short term changes in plans resist temptation to do only what you enjoy

distinguish the important from the urgent

distinguish work accomplished from hours worked

cultivate the art of using small chunks of time effectively

- have a holiday—a regular recharging of the batteries aids productivity and allows priorities to be more easily seen in perspective.

TIME WASTERS

- disorganised work areas, e.g. workshops
- poor gates and roads
- Inadequate preventative maintenance of machinery, fences and stock watering systems
- Parkinson's law—the work expands to fill time!
- visitors who don't value your time
- people who don't keep appointments
- "shopping" and sales
- morning and afternoon teas
- late breakfasts and long lunches.

Many more time savers and wasters could be added—you'll all have your favourites.

—From the Agricultural Technologists Journal, November 1978, Vol. 9 No. 4.

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CITRUS PROCESSING RESEARCH IN QUEENSLAND

By A. R. ISAACS, Food Technologist, Sandy Trout Food Preservation Research Laboratory, Hamilton.

Mandarins can be used to produce an acceptable, chilled juice, provided the fruit have not come from trees budded on Rough Lemon rootstock.

The brightly coloured juice can also be used to enhance the colour of orange juice when blended at levels as low as 10 per cent.

These findings were recently announced by the Department of Primary Industries Sandy Trout Food Preservation Research Laboratory at Hamilton, which is carrying out research to develop new processing outlets for Queensland citrus fruits.

A recently completed project involved investigations into techniques for the production of chilled preservatised mandarin juice, and blends of mandarin and orange juice.

Current research is being carried out to assess the processing quality of various varieties and rootstocks of oranges, mandarins, lemons and grapefruit, and to develop techniques for the production of high quality frozen orange concentrate.

Main Findings

The main findings of these projects are:

Queensland is the largest mandarin producing State in Australia.

Estimates received from the COD Citrus Sectional Group Committee in 1975 indicated that an overproduction of up to 1,000 tonnes of Ellendale, and 300 tonnes of Wallent mandarins was unmarketable as fresh fruit, and would be available for processing.

Also, since about 20 per cent of Ellendales are exported, it is desirable that alternative outlets become available in case of a decline in export markets.

A chilled, preservatised juice was considered to be the most promising outlet for the Australian market, so all initial work was concentrated on this product.

Trials were conducted to determine the effect on juice quality and storage life of type of preservative, variety and rootstock and, where necessary, debittering treatments.

Fruit for these trials were obtained from the Gayndah district, and processed at the STFPRL pilot plant.

Technology

The processing technology was similar to that for chilled orange juices.

Fruit were first washed with water sprays, and the juice was then extracted on an FMC "in-line" extractor.

Rag, pulp and seeds were removed by passing the juice through a fine screen, with holes one millimetre in diameter.

The soluble solids and pH of the juice were then adjusted to 13.5 per cent and 3.5 respectively.

These adjustments were necessary to enable rootstocks to be compared, without confounding the effects due to pH and soluble solids differences.

The juice was then pasteurised in a plate heat exchanger, where it was rapidly heated to 90 degrees C, and then rapidly cooled.

Pasteurisation served a two-fold function.

Firstly, it inactivated pectic enzymes, which would otherwise have resulted in loss of cloud stability.

Secondly, it lowered the initial level of microbial contamination in the juice, thus helping to increase shelf life. Three different preservatives were then added at the level permitted by the Food and Drug Regulations.

The juice was filled into rigid plastic bottles, closed, and stored at 5 degrees C for three weeks.

After storage, the juice quality was determined both subjectively and objectively.

Subjective assessment was carried out by a taste panel of about fifteen laboratory staff.

They were asked to rate the juice samples on a scale of degree of liking, ranging from "dislike extremely" to "like extremely" for colour, flavour, bitterness and general acceptability.

Objective quality tests included measurement of vitamin C concentration, plate counts for micro-organisms, and colour measurement with a "Hunter" colour difference meter.

Storage; Rootstock

Overall, the chilled, preservatised mandarin juice was an acceptable product. It had a very attractive, reddish-orange colour, which was more intense than that of orange juice.

When stored at 5 degrees C, the juice retained its quality for at least three weeks.

Sulphur dioxide added at 115 mg a litre (the maximum permitted level) was a more effective preservative than sorbic acid and benzoic acids added at 400 mg a litre.

Wallent mandarin juice was comparable in quality to Ellendale juice, although the latter had a slightly more intense colour.

Rootstock effects were important as far as flavour was concerned.

In all cases, mandarins budded on Rough Lemon rootstock yielded a juice which developed considerable bitterness shortly after extraction.

Bitterness was more severe early in the season.

The bitterness problem could be overcome by either blending the Rough Lemon juice with juice from other rootstocks, or utilising it in cordials where the bitterness can be diluted out.

Alternatively, bitterness can be removed by treating the juice with cellulose acetate gel beads.

This process was originally developed by the CSIRO Food Research Laboratory, Sydney, to debitter Navel orange juice.

The trials at STFPRL showed it to be effective in debittering mandarin juice from Rough Lemon rootstock.

Unfortunately, at this stage, the process appears to be uneconomic.

Screening Trials

A major North Coast citrus grower has recently established a processing plant on his orchard.

The orchard contains many varieties of citrus fruits on several rootstocks, as well as tropical fruits such as bananas, guavas, and pawpaws.

The major products include citrus juices and juice drinks (juice plus added water), as well as a novel range of citrus and tropical fruit blends, for example, guava and citrus, strawberry and lemon, tropical fruit cocktail.

The STFPRL has used this opportunity to assess the processing quality of all citrus varieties and rootstocks over the last two seasons.

Best Quality

Once again, bitterness development in the extracted juice was greatly affected by rootstock.

Fruit from trees on Rough Lemon rootstock yielded a bitter juice, while no bitterness was encountered with Trifoliata and Troyer Citrange rootstocks.

Colour and vitamin C levels were not affected by rootstock.

Ellendale and Hickson varieties yielded the best quality mandarin juices.

The juice from Roy's Special and Usher's mandarins was less acceptable due to bitterness, although their colour was still attractive.

Most orange varieties yielded acceptable juices, provided they were not budded on Rough Lemon rootstock.

(Continued on page 12)

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CITRUS PROCESSING RESEARCH IN QLD.

(Continued from page 11)

Joppa oranges produced rather pale coloured juices, although this could be overcome by blending with mandarin juice.

Meyer and Lisbon lemons produced acceptable drinks, although the Lisbon drinks had a more aromatic "lemony" character.

There was little difference in the quality of juice from Marsh Seedless and Ruby-blush grapefruit.

Frozen Concentrate

A project was recently commenced to determine the techniques required to produce high quality Valencia orange concentrate.

Factors currently being investigated include the effect of addition of peel oil, essence, or fresh single-strength juice on the quality of the stored frozen concentrate.

The addition of these ingredients alone or in combination, the timing of addition, that is, before or after frozen storage, and the length of frozen storage are being investigated.

The results to date indicate these components had little effect on the quality of the concentrate when assessed as juice, but were more effective when the concentrate was reconstituted as juice drinks, containing 35 per cent juice.

This trial should be completed very soon.

— Queensland Fruit and Vegetable News.

News From The Juice Market

Berri's range of two litre long life pasteurised fruit juices, introduced at the end of 1978, have proved a great success.

A spokesman for Berri Fruit Juices Co-operative Ltd, has indicated that these new sales have in no way affected the sales of Berri's chilled fruit juices.

Annual sales of the company's products to June 1980 exceeded \$43 million. The increase over the previous year was 20 per cent, which represents \$7.6 million.

The company operates manufacturing, distribution and sales offices in all capital cities, except Hobart, with regional plants at Newcastle and Canberra.

Due to the large navel orange crop this season Berri have been processing fruit on a three shift basis.

Recent estimates were that the company would process about 25,000 tonnes of navels, 7,000 tonnes of lemons and 6,000 tonnes of grapefruit over the four month period from June to September.

* * * *

Coca-Cola Export Corporation reports considerable growth in the fruit juice/juice drink market over the 12 months to April, 1980.

The chilled juice segment, it says, experienced an increase in sales of 25 per cent, and the non-chilled segment

an increase of more than 120 per cent.

The company sees this as a reflection of the great success being enjoyed by the Tetra-Brik pack which has attracted a new range of customers to the juice market.

The advertising of juice and juice drinks as "fun" products has been successful in attracting the youth market.

* * * *

Sunburst Foods Pty. Ltd. have appointed Admiral Produce and Mr. Bernie Cudmore as their fruit buying agents in the Murrumbidgee Irrigation Area of N.S.W.

The fruit will be processed at the Leeton Co-operative Cannery.

Sunburst is the largest supplier of chilled fruit juices and drinks in the N.S.W. market and also operates in Queensland, Victoria and South Australia.

The Sunburst Company, which has been active in the Riverland area for five years in association with Moore Bros. at Loxton, is part of the all-Australian Life Savers (Australasia) Ltd. Company.

Regency Foods is also part of the Life Savers Group and this company packs the "Prima" brand of juices and drinks sold on the national market.

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Nematodes Must Be Controlled When Replanting

By Dr. G. R. STIRLING, Nematologist, Loxton Research Centre, Loxton S.A.

Citrus nematode is a tiny, worm-like parasite which feeds on the roots of citrus trees and the nematode is particularly damaging when citrus is replanted.

High nematode populations are usually present in old citrus orchards and the roots of replanted trees are attacked as soon as they are produced.

Often the damage may not be obvious, and replanted trees may appear healthy. However, replanted trees infested with citrus nematode invariably grow slowly, and production during the first few years is unnecessarily low.

In South Australia, practically every mature citrus tree is infested with citrus nematode.

The nematode is also common in vineyards and in olive groves, but does not occur on other crops.

Whenever citrus is planted following the removal of citrus, grapes or olives, there is a distinct possibility that replant problems caused by citrus nematode will be encountered.

If possible, citrus nematode should be controlled before planting. Once trees are established, nematode control is more difficult.

The nematicide DBCP is the only registered chemical which can be used safely on established trees, and DBCP only provides temporary control of the nematode. It is becoming increasingly difficult to obtain in Australia, and no alternative nematicides are registered for use in S.A.

Research both in Australia and overseas has demonstrated that the following methods can be used successfully to control citrus nematodes on citrus replants.

Use of clean nursery stock — although most citrus nurseries in S.A. are free of citrus nematode, growers should ensure that the trees they purchase are not infested.

They should buy only from reputable nurseries, and have trees checked for citrus nematode by the Department of Agriculture.

The use of clean trees is particularly important when planting citrus in areas which have not been planted to citrus, grapes or olives. These areas should be free of citrus nematode, and will remain free if clean nursery stock is used and the nematode is not introduced in other ways (e.g. on farm implements or on truck or tractor tyres).

Delay replanting — there are advantages in delaying replanting for one or two

years after old trees and vines are removed. Such a delay provides an opportunity to rejuvenate soils by improving their structure using soil amendments and cover crops.

Also, citrus nematode populations decline rapidly under fallow or non-host cover crops. Eradication will not be achieved because a few nematodes usually survive on old roots which remain in the soil but a substantial reduction in nematode numbers will occur.

Resistant rootstocks — most of the citrus rootstocks commonly used in the Murray Valley (including the most common rootstocks, sweet orange and citronelle) are susceptible to citrus nematode.

Trifoliate orange (*Poncirus trifoliata*) was first reported resistant to citrus nematode about 30 years ago. Since then several biotypes or strains of citrus nematode have been found and the level of resistance obtained with this rootstock now appears to depend on the selection of trifoliate orange used and the biotype of citrus nematode present.

In Australia trifoliate orange generally shows moderate resistance to citrus nematode because it maintains nematode populations which are lower than those on susceptible rootstocks.

Despite its resistance to citrus nematode, trifoliate orange has not performed as well as expected in the sandy soils of the Murray Valley. It should only be used in heavy soils where its resistance to the fungus *Phytophthora* which causes root rot gives it an advantage.

The citrange rootstocks (troyer and carrizo) which resulted from crosses between *Poncirus trifoliata* and *Citrus sinensis* were initially reported to have some resistance to citrus nematode.

As already stated the resistance of citrange rootstocks now also appears to vary according to the biotype of citrus nematode present.

In Australia citrange rootstocks generally maintain nematode populations as high as sweet orange and citronelle. However it is recommended for use in replant situations because it appears to be most able to tolerate high numbers of citrus nematodes without adverse effects on yields.

Preplant fumigation — Trials conducted both in Australia and overseas have shown conclusively that pre-plant fumigation for citrus nematode is worthwhile regardless of the rootstock being used.

Nematicides usually suppress nematode populations for at least four years after treatment, so that a strong, vigorous root system is established before nematode populations begin to increase.

Trees grown in soil treated with nematicides are usually much larger, and bear more fruit in the first few cropping years, than trees grown in untreated soil.

The nematicides recommended for use when replanting citrus contain 1, 3D (1, 3 dichloropropene) and are marketed under the trade names Telone II (R) and DD (R).

Costs of the chemicals required for these treatments ranges from \$750-\$1,100 per hectare.

Costs of nematicides can be reduced without reducing their effectiveness by treating strips centred on the row, rather than using an overall treatment.

For example, if trees were to be planted in rows 7 m apart, treatment of a strip 3.5 m wide using the recommended rates would halve costs but adequately protect replanted trees in their first few years of growth.

Ethylene dibromide (EDB) is another fumigant which can be used as a preplant nematicide for citrus. Its main advantage is that it is cheaper than the 1, 3D nematicides.

However, EDB is not commonly used for citrus because it is less toxic to citrus nematodes than 1, 3D and it does not penetrate remaining root tissue as readily. Also it sometimes depresses growth for one or two seasons, although trees usually overcome this initial depression in growth.

NEWS FROM OVERSEAS

In Brazil the 1980 Sao Paulo orange crop has been estimated at about 6.9 million tonnes. This estimate, which accounts for about 80 per cent of Brazil's total orange production and almost all of the oranges used for processing, is 13 per cent above last year's record crop.

—U.S. Dept. of Agriculture.

* * * *

The 1980 Annual Conference of the N.Z. Citrus and Sub Tropical Council has carried a resolution that the name for "New Zealand Grapefruit" be changed to "New Zealand Goldfruit".

—"The Orchardist" of New Zealand.

* * * *

The Israeli Government has sharply increased prices for irrigation water.

Irrigation water prices have risen steadily in Israel since 1973, when energy prices began climbing. In April, water prices were boosted from the equivalent of 7.8 cents (Aust.) per cubic metre to 18 cents — a jump of 320 per cent over the April 1979 level.

The profitability of orange production is likely to be severely affected. For shamouti oranges, which require an average 203 cubic metres of water per tonne, the additional cost would be equal to \$19.28 per tonne of product. Net average income per tonne of oranges at March 1980 prices — not taking into account the higher water charge — is about \$20.

Citrus plantations yielding less than 38 tonnes per hectare will become unprofitable. The national average yield is 36 tonnes.

Grapefruit and lemons will be less affected than oranges — grapefruit because they require less water per tonne of product, and lemons because they command higher prices.

—U.S. Department of Agriculture.

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Mechanical Harvesting in Florida

After more than a decade of study and several million dollars in research, the Florida industry has the basic elements of a mechanical harvest system for oranges. What's more, the three basic elements have been tested in the field together and they have worked. The elements are:

Abscission chemicals which can loosen the fruit for ease of harvest and in some cases drop it from the tree.

Machines, a variety of them, which can drop the fruit onto the ground or a catchframe.

Devices which can mechanically pick up the dropped fruit and load it for delivery to the processors.

The system has been tested with most Florida varieties in different locations and conditions and has been able to operate at a cost which matches or is less than that of hand picking.

The result of this extensive and expensive program has produced, for the most part, apathy among both growers and processors in the state. This season, only a handful of growers will make any attempt to use the machines commercially. Most of the major manufacturers, both in the machinery and the chemical field, have scaled down or abandoned their efforts. And funding for research is meeting opposition and in some cases drying up completely.

This does not mean that the Florida mechanization program is at an end. Experimental work by the University of Florida, the USDA, and the Florida Citrus Commission are continuing extensive trials, and the industry is considering the unprecedented possibility of putting a chemical through the expensive and arduous process of EPA clearance and registration.

CHANGE OF ATTITUDE

What has happened is that the sense of urgency has gone out of the mechanization effort, and even with an all-time record crop expected this winter, only a tiny fraction of it will be harvested mechanically.

Many factors figure in what has become more of a change in attitude than a change in approach. One of them was undoubtedly the result of the 1977 freeze, which produced two things — two seasons of short crops and a new round of prosperity among the growers.

Because there were fewer oranges to pick, fewer pickers were needed and because oranges were bringing better returns, growers were not as anxious to find cheaper substitutes for the hand-picking crews.

In addition, anticipated labor shortages and union problems have not yet developed. Although the makeup of the work force has changed considerably, with Mexican Americans and Mexican immigrants making up a greater and greater proportion of the harvesting crews, the harvest has always been completed without crises developing.

Another factor is with the system which has been developed. Although it is workable, it is by no means perfect and there has been resistance to some elements at both the grower and the processor level.

One shortcoming has been with the abscission chemicals which are the primary element in starting a mechanical harvest program. A number of materials

have been developed and tested—Acti-Aid, Sweep, Pik-Off and Release—and some of them have been cleared for commercial use. However, most of the materials have not performed consistently.

Even the best of the materials cause some discoloration of fruit, and some of them have side effects such as partial defoliation of trees, irregular drop because of temperature or other climatic conditions. Of the materials tested, Release, an Abbott Laboratories material, seems most promising, but it has not yet been cleared for commercial use.

Because they feel that it may be the key to the ultimate mechanization program, the industry is negotiating with the developer for rights to the material and there is a possibility that the Florida producers will finance the testing necessary to get it cleared. However, pending this development, growers must depend on the more erratic materials already approved by the EPA.

Another factor in resistance to change has been the decision to drop the fruit on the ground and then pick it up with some sort of mechanical device. Although some of the originally developed catchframes are still in use, most of the continuing test work is with pick-up devices from the ground.

Fruit on the ground naturally produces problems, especially in the first mechanical harvest when years of accumulated debris—including twigs, leaves, broken bottles, lost tools, everything imaginable—is gathered up with the fruit. This creates nightmares for processors who must necessarily process the fruit rapidly because of potential contamination.

TREE MODIFICATION

There may also be some need for tree modification to raise the skirts of the trees so that sweepers or other devices can reach underneath. Pick-up devices may also have to be modified because of the variety of planting patterns, including raised beds, in different parts of the state.

The bedded plantings, about 16 per cent of the state's total plantings, and their location, in the southern part of the citrus producing belt where temperatures and humidity are different from those in the ridge area where the majority of the trials have been conducted, have been seen as a special problem for the mechanical system. This, however, did not prove to be the case in recent experiments.

Reporting at the Florida Horticultural Society meeting, Dr. W. C. Wilson of the Department of Citrus said that a test with oranges in South Florida showed that a combination of Release (100 ppm) and Acti-Aid (1.5 ppm) gave good results without appreciable defoliation of the trees. Cost of the treatment, including materials and application, was about 41 cents per box.

In the concluding portion of the same test, USDA engineer Scott Hedden reported a successful pickup system which was accomplished at a cost of 39.6 cents a box. In the trial, about two per cent of the fruit was left on the trees as compared to one per cent for hand picking.

The removal unit used in the trial was an air blast shaker while a tractor-drawn windrow rake and an offset pickup

machine were used to gather up the crop. Hedden's 39.6 cent a box cost was based on the use of this combination to harvest 1,500 boxes a day. Capital investment in the system was estimated at \$103,000.

The high initial investment has been another factor in slowing the process of mechanical harvest. Most of the machines which will be used this year are experimental units which have been modified by subsequent owners, or machines which have been abandoned by their developers and picked up at a low price by someone who still sees promise in the devices.

One of the remaining faithful is independent grower Jim Simpson, who is determined to make mechanization work. He owns an air blast shaker and a mechanical limb shaker and is cooperating with other growers to build still another version of the limb shaker.

While he is obviously committed to mechanization, he does not think that the industry is ready for a complete switch-over. In his own program, he makes no effort to start harvesting mechanically until January because he does not believe that the fruit maturity and the abscission chemicals available will work before that time.

"We do not have a satisfactory chemical unless we can get clearance for Release," Simpson reports. "There is too much variability in the results with the other materials because we cannot know what the weather will be like in the period immediately following application. If it gets hot, everything will drop off; if it stays cool, you can wait for weeks and see no results."

EASIER FOR PICKERS

As things stand now, Simpson's—and the rest of the state's program for mechanical harvest is a supplemental one. "What we can do with the chemicals and the machines is really to make the job easier for the pickers," he explains. "If we can get the fruit on the ground, we can get crews in to pick it up. This alone will considerably reduce our labor requirements in case of an emergency and will attract more workers because the job is much easier."

"One positive thing is that the hand crews are starting to accept the machines. At times when we have had the limb shaker in the field you will see a picker stop the operator and ask him to reach and give a shot to a hard-to-reach branch or an exceptionally tall tree to bring the fruit down. As a matter of fact, it seems that workers are more ready to accept what we can do than a lot of the growers."

While all of the harvesting systems have shortcomings, there is no thought of abandoning the program. All of the state's research organizations still have experimental projects in the works, there are at least three custom operators who plan to use mechanical methods in their programs, and a half dozen growers are going ahead on their own.

What seems to be lacking now is a stimulus to rejuvenate the programs of the past. This could come from any number of sources—inflationary wage increases, a big surge of union organizing activity, a radical breakthrough among those still experimenting in the field—and apathy could be replaced with activism in the biggest of the citrus producing districts.

—"The Citrograph", California, USA.

River Murray Commission Storages, Diversions and Water Supply

AUGUST SUMMARY

STORAGES

	Capacity	Week ending
	Megalitres	27-8-80
		Megalitres
Hume Reservoir	3,038,000	1,467,000
Lake Victoria	680,000	681,000
Menindee Lakes	1,794,000	1,230,000
Dartmouth Reservoir	4,000,000	1,831,000
Burrinjuck	1,026,000	468,000
Blowering	1,628,000	1,026,000

WATER FLOWING TO SOUTH AUSTRALIA

Week ending 27-8-80	122,000
Monthly entitlement for August	124,000
Total for August to 27-8-80	313,000
Total for July	161,000

WATER QUALITY

(Average quality for week — total dissolved solids in parts per million)

	27-8-80	29-8-79
Swan Hill	147	172
Euston	108	137
Red Cliffs	132	235
Merbein	142	304
Lock 9	168	253
Lake Victoria	394	269
Berri	264	331
Waikerie	390	470
Mannum	570	357
Murray Bridge	600	400

— Extracts from River Murray Commission Reports

Fresh Citrus Exports

JULY SUMMARY

AUSTRALIAN FRESH FRUIT EXPORTS BY STATES (Tonnes)

	QLD.	N.S.W.*	VIC.*	S.A.	W.A.	TOTAL
Grapefruit	147.0	—	0.1	10.9	—	158.0
Lemons	120.0	12.3	79.3	48.5	24.3	284.4
Mandarins	5025.8	—	133.0	24.9	—	5183.7
Oranges	34.3	16.7	470.6	2717.1	2.4	3241.1
Tangelo9	—	—	—	—	.9
	5328.0	29.0	683.0	2801.4	26.7	8868.1

* Vic./NSW Border Districts.

AUSTRALIAN FRESH FRUIT EXPORTS BY DESTINATIONS (Tonnes)

	G-fruit	Lemons	M-rins	Oranges	Tangelos	Total
PNG and Solomon Islands	1.7	3.8	21.5	77.7	—	104.7
Pacific Islands	1.0	0.8	0.8	42.1	—	44.7
New Zealand	—	—	—	1511.5	—	1511.5
Singapore	—	49.2	281.8	860.6	.9	1192.5
Malaysia	—	26.8	—	275.4	—	302.2
Indonesia	0.2	0.8	66.3	76.9	—	144.2
Hong Kong	—	23.9	30.0	26.7	—	80.6
Philippines	—	2.2	—	1.3	—	3.5
Christmas Islands	0.2	0.2	1.4	5.0	—	6.8
Canada	—	54.0	1260.7	—	—	1314.7
Bahrain	—	—	18.8	—	—	18.8
Kuwait	10.0	36.1	389.9	261.2	—	697.2
U.A.E.	0.2	0.1	232.3	—	—	232.6
Saudi Arabia	—	0.1	1835.2	—	—	1835.3
Sweden	13.0	13.1	358.8	—	—	384.9
Norway	0.7	—	236.0	—	—	236.7
Holland	41.5	25.6	95.9	102.7	—	265.7
Germany	—	—	87.8	—	—	87.8
France	—	—	39.8	—	—	39.8
Belgium	76.5	45.9	226.7	—	—	349.1
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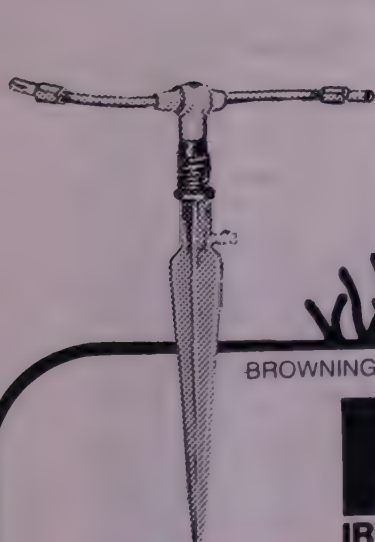
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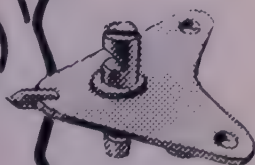
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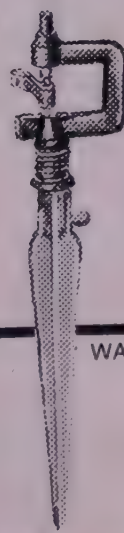
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M.M. 11/83/390

CHINA-A History of the Culture and Use of Citrus Fruits in China

By PATRICIA (Broadbent) BARCLEY, Senior Research Scientist, Biological and Chemical Research Institute, Rydalmere.

Of all existing ancient records in which citrus fruits are mentioned, none go back further than those of the Chinese.

Oranges, shaddocks and Poncirus trifoliata were ranked by the old Chinese authors amongst the wild or "mountain" fruits and were found in China both in the wild state and in cultivated forms several thousand years ago.

The very earliest mention of citrus fruits occurs in the "Shu-king" or "Book of History", a collection of old documents edited by Confucius around 500 B.C.

The "Chou-li" written in the Chou Dynasty (1122-249 B.C.) informs us that the wood of the orange tree is used for making the body of the bow.

A poem written in 314 B.C. contains

a "eulogy of the orange" which refers to the excellent orange trees which were sent to the Emperor as a tribute from the Southern Provinces but which would not grow in the north country. Another poem refers to the crooked Poncirus trifoliata tree as a place where birds are fond of making their nests.

In his book "Trees and Grasses of South China" written in A.D. 304 Ji Han notes the use of ants to combat harmful insects on orange trees. This is probably the world's earliest literature on the use of biological means to keep insects under control in citrus groves!

The earliest description of the citron occurs in the fourth century but this fruit appears to have been a foreign importation. The "Buddha's hand" or fingered citron, a five lobed handshaped scented variety, is a symbol of happiness and is frequently sold for its perfume for keeping in houses. About the 4th century A.D. tea became a favourite beverage with the Chinese and orange peel or flowers were common ingredients.

By the 7th century A.D. commercial orchards of thousands of trees had been planted in China.

The making of wine from oranges is first referred to in 10th century A.D. From a monograph of citrus written in A.D. 1178 we learn of the sundry uses of citrus by the Chinese. A certain variety of sour orange was used for scenting clothing, seasoning vegetables and it was also preserved in honey. From a particular orange,

"the villagers gather its blossoms and distil a perfume from them".

By the 12th century the trade in oranges was well organised throughout eastern and southern provinces. The peel of all varieties of citrus was, and still is today, an important article of commerce throughout China — it is gathered up, dried and sold to druggists who use enormous quantities of it in the preparation of medicines. Citrus peel is a panacea for ills as diverse as fish poisoning, pin worms and cancer of the breast!

In the 1970's orange seeds were found among objects unearthed in a 2,100 year old tomb in Central China.

Citrus cultivation in China did not make any significant progress because no encouragement was given to research for centuries before liberation.

An attempt to revive the long neglected citrus industry got under way in the years following the establishment of the People's Republic in 1949. During the Cultural Revolution, citrus was regarded as a "revisionist root" and in many provinces, trees were removed in favour of rice. Consequently citrus research and production suffered severely. Since the end of the Cultural Revolution considerable efforts have been made to widen research programmes and modernise citrus production.

* From (a) S. Tolkiwsky (1939), Hesperides, John Bale, Sons & Currow Ltd.
(b) Liang Bao (1979) Citrus cultivation in China Seed and Nursery Trader.

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INDUSTRY DOINGS

ACGF MEETINGS

A series of ACGF Meetings will be held in Sydney on 26 and 27 November to review industry activities in the 1980/81 season.

Meetings of the Executive Committee, the ACGF Working Committee and the Lemon Sub-Committee will take place on Wednesday 26 November and a Delegates Meeting will be held on Thursday 27 November.

* * * *

COC ELECTIONS

Eight nominations have been received for the four grower positions on the Citrus Organisation Committee of South Australia (COC).

The nominations are Mr. W. C. Davis of Winkie, who is seeking re-election; Mr. P. V. Connellan, Loxton; Mr. G. B. Fulwood, Waikerie; Mr. J. D. Gordon, Paringa; Mr. G. Harrington, Moorook; Mr. D. R. Ingerson, Berri; Mr. I. R. Oliver, Waikerie; and Mr. D. S. Simpson of Loxton.

Ballot papers to elect the four grower representatives have been sent to all registered growers and the ballot will close at noon on Wednesday November 12.

COC's Annual Meeting will be held at Barmera on Friday 31 October and the nominees have been invited to address the meeting.

* * * *

NEW ASSISTANT SECRETARY FOR COC

Mr. David Cain has been appointed Assistant Secretary of the Citrus Organisation Committee of SA.

His appointment follows on the recent resignation of the previous Assistant Secretary, Mr. Bob Poignand.

* * * *

GOOD YEAR FOR BFJ

A record 76,660 tonnes of fruit were processed by Berri Fruit Juices Co-operative Ltd. in the last financial year.

Details were given by the Company's Chairman, Mr. David Andary, at the recent Annual Meeting.

The processed fruit comprised 58,572 tonnes of oranges, made up of 41,505 valencias, 16,473 tonnes of navels and 194 tonnes of commons, 5,315 tonnes of lemons and 5,868 tonnes of grapefruit.

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The Company's sales totalled \$43.6m, up 20 per cent from the previous year.

In his address to the Annual Meeting Mr. Andary issued a warning against complacency. He said the tariff protection was due for review in 1982, and the citrus industry must not lose sight of the world situation as regards supply and pricing.

* * * *

FRUIT JUICE ASSOCIATION PRESIDENT

Mr. Neville Cunningham of Adelaide has been elected President of the Australian Fruit Juice Association for 1980/81.

Mr. Cunningham is the Manager of the Fruit Juice Division of Diverse Products Ltd. at Thebarton SA. This Company is the major subsidiary company of C-C Bottlers Ltd.

He is a delegate from the Australian Fruit Juice Association to the Australian Citrus Industry Council.

* * * *

DATES SET FOR 1981 CONFERENCE

Arrangements have been made for the 33rd Annual ACGF Conference to be held at Loxton S.A. on 18 and 19 May, 1981.

Further details will be provided to member organisations and delegates in due course. Make a note of the dates in your diary.

* * * *

NEW NAME FOR YANCO AGRICULTURAL COLLEGE

As from the 1st January 1981 the Agricultural College at Yanco, New South Wales will be known as the Murrumbidgee College of Agriculture.

The change in name has been announced by the NSW Minister for Agriculture, Mr. Jack Hallam, following a recommendation from the College's Advisory Council.

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BRAZIL'S CITRUS INDUSTRY

Brazil has become a formidable competitor in the world market, multiplying sales 56 times in 15 years, and still growing. This article, extracted from a new USDA Foreign Agricultural Service publication, provides some facts and figures on Brazilian production to give growers a better idea of just what the competition is like.

The commercial citrus industry of Brazil is centered in Soa Paulo State within a 150-by-50 mile belt, extending from the city of Campinas in the south to Sao Jose do Rio Preto and Columbia in the north. The belt has recently begun to expand northward into Sao Paulo's neighbouring State of Minas Gerais, particularly near the town of Frutal.

Sao Paulo State comprises most of Brazil's commercial production. It accounted for 68 percent of Brazil's total output and 72 percent of Brazil's total area of oranges in 1978. Rio de Janeiro is Brazil's second largest producing State followed by the States of Rio Grande do Sul and Minas Gerais.

New plantings are occurring mainly to the west and north of Bebedouro towards the towns of Sao Jose do Rio Preto and Frutal. Most plantings in these areas have taken place on land formerly in pasture. Rising land prices have made it uneconomic to keep land in pasture and forced farmers to switch to higher value crops such as citrus.

The presence of citrus canker in certain parts of western Sao Paulo State has confined the commercial producing zone to areas north of the Tiete River (which divides Sao Paulo east to west), and east of Sao Jose do Rio Preto. Citrus produced on the south side of the Tiete, including that from the neighbouring State of Parana', is prohibited from being shipped north of the river, where all of the processing plants are located.

There is still ample room for expansion in areas both inside and outside of the commercial producing zone. However, several factors or barriers, besides citrus canker, hinder growth. Urbanization limits expansion south of Campinas, while the high concentration of sugarcane to the east of the current commercial producing zone hinders new plantings of citrus in these areas. In addition, warm winter temperatures and poor soils are restricting the commercial zone from spreading to areas north of Frutal.

Farm Characteristics

Industry sources estimate that Sao Paulo State has about 5,000 commercial farms devoted mainly to citrus. Based on the IEA's estimate of 89.5 million trees in Sao Paulo State in 1978, the average holding is about 17,000 trees. The size of individual holdings varies considerably — from many farms having only 500 trees to a few with

more than 500,000. On the whole, these farms average about 210 trees per hectare. Many of the smaller farms, however, average up to 250 trees per hectare.

Most of the citrus farms are owner operated, with very little land leased for citrus production. Commercial citrus groves operated by tenant farmers are uncommon.

Irrigation

The rainy season in Sao Paulo State begins in October and lasts until about April. The principal bloom is in August and September, two of the driest months.

About 98 percent of the citrus groves in Brazil rely entirely on rainfall for moisture needs. Although irrigation enhances yields, irrigation of citrus farms is uncommon in Brazil owing to the high costs of investment and energy.

One farm in the southern part of the commercial citrus zone accounts for almost all of the irrigated citrus in Sao Paulo. Most of its irrigation pumps are operated by electrical power rather than diesel fuel. The Government has supported the conversion of diesel pumps to electrical pumps by offering low-interest credit for the purchase of electrically powered irrigation equipment. The farm encompasses about 3,100 hectares and has approximately 500,000 trees. Most of its production is sold to the fresh fruit market, both local and export. About 40 percent of Brazil's fresh citrus exports originate from this farm.

Yields

Because irrigation is not widely practiced in the major citrus regions, yields vary in line with amount and distribution of rainfall. Yields, however, have tended to increase over the past decade, from 1.20 to 1.50 boxes per tree in the late 1960's to between 1.57 and 2.18 boxes during 1976-78. The 1978 average yield of 2.18 boxes per tree was a record high. The best managed groves regularly averaged between three and four boxes per tree in the late 1970's.

Yields are improving because of better cultural practices in both the nurseries and groves and better selection of rootstock and budwood. Application of fertilizers is universal, and the use of spray material is much more common than in the past. Because of high land values and favourable prices of oranges, farmers are now finding it more economical to take better care of their groves. Trade sources

indicate that average yields are likely to improve substantially (especially in groves planted after 1975) and that a larger percentage of trees will be yielding as much as four boxes in the near future.

COST OF ESTABLISHING NEW ORANGE GROVES

According to a 1978 study by IEA, the per-hectare cost of establishing an orchard is \$554 the first year and \$1,478 in the first four years. The largest single expense is labour, followed by machinery operation.

The data in the study do not take into consideration the purchase price of land. In 1979, land purchase costs in Sao Paulo State average approximately \$1,730-\$1,850 per hectare for unimproved prime land. Based on 1977 currency values, land values increased from an index value of 100 in 1969 to 500 in 1978.

OPERATING COSTS

In an August 1978 study, the IEA also estimated production costs of a well-established orange grove for the 1978 and 1979 production years. Between these two seasons, production costs were projected to rise by 50 percent, from 8,224 to 12,309 cruzeiros per hectare. The greatest increase was in disease and insect control.

However, when converted into U.S. dollar equivalents, the costs per hectare would increase from \$533 in 1978 to \$616 in the following year, a rise of only 16 percent. The devaluation of the cruzeiro in relation to the U.S. dollar is the reason for the difference in percentage increases when cruzeiros are converted to dollars.

GROWER PRICES

The Government indirectly controls prices paid for processing oranges, through a "reference" price based on the weight of the fruit, not on pounds solids. In other words, a grower receives the same price for the fruit regardless of its quality. Also, there is no differential based on the location of the groves.

Enforcement of the pricing scheme is carried out by the Foreign Trade Department of the Bank of Brazil (CACEX), which has the authority to deny export licenses to firms that do not comply with the prescribed price.

(Continued on page 6)

Sao Paulo State: Costs of Establishing a Citrus Grove, 1979 (In U.S. dollars per hectares (1))

Year	Labour	Seedlings	Fertilizer and lime	Spray materials	Machinery operation	Depreciation	Interest	Total
First	138	165	45	34	106	32	34	554
Second	70	23	18	30	52	18	13	224
Third	81	—	49	57	61	21	15	284
Fourth	118	—	85	95	72	24	22	416
TOTAL	407	188	197	216	291	95	84	1,478

— Denotes not applicable.

(1) Based on exchange rate of December 31, 1978: US\$1.00 = Cr\$19.95. Assumes 200 trees per hectare.

Source: Instituto de Economica Agricola (IEA), Sao Paulo, Informacoes Economicas, July, 1978.

FERTILIZERS FOR SUNRAYSIA CITRUS

In most Sunraysian soils that grow citrus trees, there is either some element deficiency or an excess.

In order to maintain proper health and high productivity, of good quality citrus, fertilizer needs to be applied to orchards.

A booklet "Fertilizers for Citrus — Sunryasia" has recently been produced by Adelaide & Wallaroo Fertilizers Ltd. and was officially launched at the Grand Hotel, Mildura, on Tuesday October 14, 1980.

Mr. Harry Creecy, District Horticulturist—Dareton, prepared the booklet with assistance from the New South Wales and Victorian Departments of Agriculture and "Top" Horticultural Officers.

The booklet complements comprehensive services already provided by Adelaide & Wallaroo Fertilizers in the Sunraysia district.

Adelaide & Wallaroo Fertilizers provide an excellent leaf analysis service to citrus growers in Sunraysia. These analyses are most useful in adjusting fertilizer programmes for better production and fruit quality.

Mr. Mark Tregonning, Adelaide & Wallaroo's Horticultural Officer at the "Top" Buronga Depot said the leaf analysis is an excellent way to confirm the nutrient status of citrus trees.

The depot also provides a convenient on farm delivery service throughout the Sunraysia District.

The new specialised booklet for citrus growers in Sunraysia is being posted to all members of the Sunraysia District Citrus Co-op. Society Ltd.

Consideration is being given to the issue of a similar booklet for South Australia's Riverland citrus growers next year.

SCOTT PROPERTY FOR AUCTION AT TOCUMWAL

The well known "Glentworth" citrus property at Tocumwal, NSW, will be auctioned on Friday 28 November, 1980 at the Tocumwal Bowling Club.

The property has been owned and operated by the Curtis Scott family since 1936.

Curtis Scott has been well known in the Australian citrus industry for most of his working life. For many years he was Chairman of the Lemon Marketing Board of NSW and is still a member of that Board.

The property comprises 20 hectares of Valencia oranges, 3.5 hectares of Leng Navels, 8 hectares of Lemons, and 4.5 hectares of Grapefruit. The younger trees are double planted. Tree age ranges from 15 years to mature trees and plantings are on selected Citronelle, Citrange, Trifoliata and Sweet Orange stock.

The entire property is under permanent spray irrigation direct from the Murray River. Water quality eliminates irrigation salinity problems and the system is designed to allow easy management control.

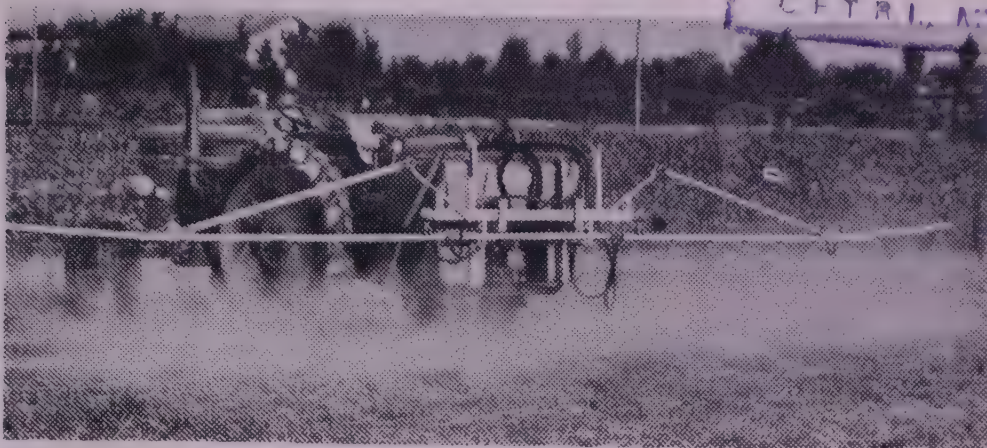
Glentworth is situated 5 km east of Tocumwal, handy to Cobram, and approximately 250 km north of Melbourne.

Arrangements for the auction are in the hands of K. N. Crow and Co. and Ellis Gough Real Estate both of Cobram, Victoria. (See advertisement this issue for details).

October, 1980

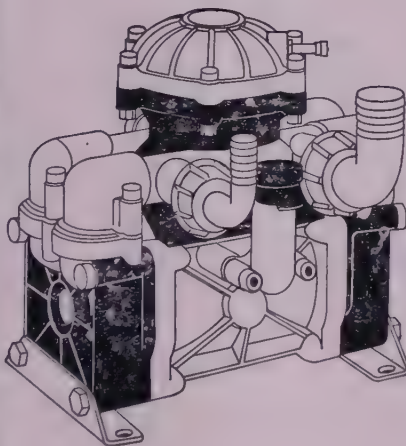
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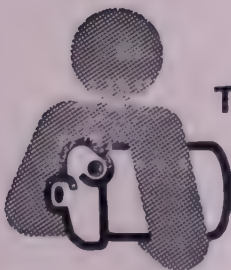
Davey-Imovilli high pressure diaphragm pumps are designed so that the material being pumped never comes into contact with the pump's working parts—it only reaches plastic lined surfaces and stainless steel valves. Corrosive chemicals like those used for spraying citrus, grape and tobacco crops can be handled without excessive wear and tear to the pump.

There's a full range of Davey-Imovilli high pressure diaphragm pumps—plus models for larger volume boom spraying. Pressures available: from 70 psi right up to 713 psi.

Ideal for horticultural and agricultural spraying, high pressure washing of farm vehicles, vineyard spraying and high pressure weed control spraying.

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NAME

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DP0456

BRAZIL'S CITRUS INDUSTRY

(Continued from page 4)

The 1979 season's price agreement was decided in late March 1979, and for the first time in five years, industry and grower representatives agreed upon a price without intervention from the Government. The 42-percent increase in the 1979 price over the previous year's was roughly equivalent to the rate of inflation in Brazil.

In 1978, most orange juice companies paid producers with a 90-day promissory note carrying a 22-percent annual interest rate, discounted from the grower's return. In 1979, however, the payment was different. Early in the season, the growers and industry representatives estimated the number of boxes a grove would produce throughout the entire processing season. Based on this estimate, the industry advanced the growers 11 cruzeiros per box in March or April and another 12 cruzeiros per box by August 31. Subsequent payments were made on the 10th day of each month beginning in September, based on the number of additional boxes received by the plant during the month.

ASSISTANCE TO GROWERS

The Federal and State Governments have extended a number of benefits to facilitate the development of citrus. Among

the more important ones are the availability of subsidized credit, assistance in establishing grower prices for oranges, and the establishment of several research and extension programmes.

Subsidized credit for the financing of production expenses (such as fertilizer, pesticides, labor, and machinery operation) is one of the Government's principal contributions to the grower sector. Loans for the purchases of fertilizer are interest free and interest rates for the financing of other production expenses range from 15 to 18 percent. In real terms, adjusted for inflation, these interest rates are indeed favourable alongside an inflation rate of 41 percent in calendar 1978 and 77 percent in 1979.

In view of the high rate of inflation, the availability of low-interest credit is limited, and most of the loans cover less than 80 percent of a grower's total annual variable costs of production. Investment credit for the financing of new groves has not been available for several years.

Citrus is not one of the agricultural commodities included in the Government's minimum price program. (The minimum price program includes about 45 agricultural commodities and is controlled and administered by the Production Financing

Commission (CFP) within the Ministry of Agriculture). However the State and Federal Governments work with growers and processors to establish mutually acceptable "on tree" prices for oranges bought by the processing industry. This reference or grower price was set at 51 cruzeiros per box of oranges for the 1979 season. The purpose of the reference price is to ensure growers a fair return for their fruit.

The Federal and Sao Paulo State Governments, convinced that only better and more intensive research can lead to higher agricultural productivity, have initiated programs aimed at improving citrus cultivation and fruit quality. The Brazilian Agricultural Research Enterprise (EMBRAPA), a Federally funded program, operates 15 major regional and crop research centres throughout Brazil and finances graduate-level education for hundreds of researchers, both at home and abroad. EMBRAPA's citrus research staff is centred at the National Fruit and Manioc Research Centre in Cruz das Almas in the State of Bahia. However, citrus research at this centre has only recently gotten underway.

(Continued on page 10)

Sao Paulo State: Costs of Operating a Well-Established Orange Grove, 1978-79

Item	1979(1)	1979(2)	Increase	1978(1)	1979(2)	Increase
	Cruzeiros per hectare		Percent	US dollars per hectare(3)		Percent
Labor	2,093	2,730	30	136	137	1
Fertilizer and lime	1,631	2,297	41	106	115	8
Disease and insect control	1,672	3,418	104	108	171	58
Machinery	1,216	1,674	38	79	84	6
Others	385	621	61	25	31	24
Depreciation	1,226	1,596	30	79	80	1
TOTAL	8,224	12,309	50	533	616	16

(1) For harvest in calendar 1978. Assumes yield of 340 boxes per hectare. (2) Forecast for harvest in calendar 1979. Assumes yield of 400 boxes per hectare. (3) Exchange rate as of December 31, 1977: US\$1.00 = Cr\$15.44; December 31, 1978: US\$1.00 = Cr\$19.95.

Source: Instituto de Economica Agricola (IEA), Sao Paulo, Prognostico, 1978/79, August 1978.

Sao Paulo State: Production and Distribution Forecasts of Frozen Concentrated Orange Juice and Citrus Pulp Pellets, 1985

Item	Unit	Average 1976-78	1985 forecast(1)	
			Lower limit	Upper limit
Oranges:				
Production	1 million boxes(2)	114	220	240
Processed(2)	— do —	82	178	198
Share processed	percent	72	81	82
Frozen concentrated orange juice:				
Beginning stocks	1,000 metric tons	0	0	0
Yield per box of oranges	kilograms	3.4	3.4	3.4
Production	1,000 metric tons	279	605	673
Export potential	— do —	268	555	623
Share exported	percent	96	92	93
Apparent consumption	1,000 metric tons	11	50	50
Ending stocks	— do —	0	0	0
Citrus pulp pellets:				
Beginning stocks	1,000 metric tons	0	0	0
Yield per box of oranges	kilograms	4.2	4.2	4.2
Production	1,000 metric tons	337	748	832
Exports	— do —	330	733	815
Share exported	percent	98	98	98
Apparent consumption	1,000 metric tons	7	15	17
Ending stocks	— do —	0	0	0

(1) Forecasts of the supply and distribution of FCOJ and CPP for 1985 are based on two orange production forecasts; a lower bound of 220 million boxes (8.98 million tons) and an upper bound of 240 million boxes (9.78 million tons). The estimates are further based on the assumption that domestic consumption of fresh oranges (non-commercial production and losses plus fresh commercial consumption) will increase at an annual rate of 3 percent from the average level obtained in 1976-78 and that the yields of FCOJ and CPP remain constant. (2) One box = 40.8 kilograms or 90 pounds.

SOLORA LAUNCHES NEW GRAPEFRUIT PRODUCT

In a bold new approach to overcoming the grapefruit sales barrier, Solora Citrus Products Ltd. has begun test marketing a pre-peeled, bite sized cubed, container of grapefruit.

The segments of grapefruit, not unlike pineapple pieces are being sold in a small round, plastic container that contains approximately two grapefruit.

The bite sized cubes with added vitamin C, are peeled and processed in an Adelaide factory and future expansion will depend on market place acceptance.

The product has a wide range of potential uses including use as a breakfast food, delicious desserts or an anytime summer snack.

Solora Citrus Products Ltd is part of the Solora Group; the 114 hectare citrus property situated five kilometres south of Berri in South Australia.

General Manager of Solora, Mr. Don Stephenson has advised that although in its infancy, the product has already received an enthusiastic response from those who have tried it.

Experimental work is also taking place on various other citrus products such as marmalades, liquors and citrus peel.

The Solora property has over 12 hectares of double planted grapefruit and 65 hectares of oranges in the total of 115 hectares planted to citrus.

Congratulations to Solora on this initiative!

ACGF Economic Survey

On behalf of the Australian Citrus Growers Federation Mr. Fred Walpole, secretary-manager of the Central Coast (NSW) Citrus Marketing Board is again seeking the co-operation of Australian citrus growers in providing economic information in respect to the 1979-80 year.

With a further IAC Inquiry scheduled to take place during 1981/82 on the question of tariff protection on orange juice, the Federation sees the collection of information on growers' cash costs as being of vital importance to the preparation of industry evidence to the proposed Inquiry.

The target for this year's survey has been set at a minimum of 75 growers so as to cover a good cross section of the industry. The suggested basis for the 75 growers has been 25 from South Australia, 15 from the Sunraysia area, 9 from Mid-Murray, 16 from the Murrumbidgee Irrigation Area and 10 from the Central Coast of NSW. Western Australia and Queensland have not in the past participated in the surveys.

The information provided by the ACGF Surveys is not intended to represent the average of the industry.

Because of the ready availability of their records the participating growers could probably be classed as growers of above average management efficiency and this factor is always taken into account in using and interpreting the resultant information.

The Survey results provide a good guide

as to changes in cash costs of production from year to year and the information is of considerable importance to the Federation in its work on behalf of growers.

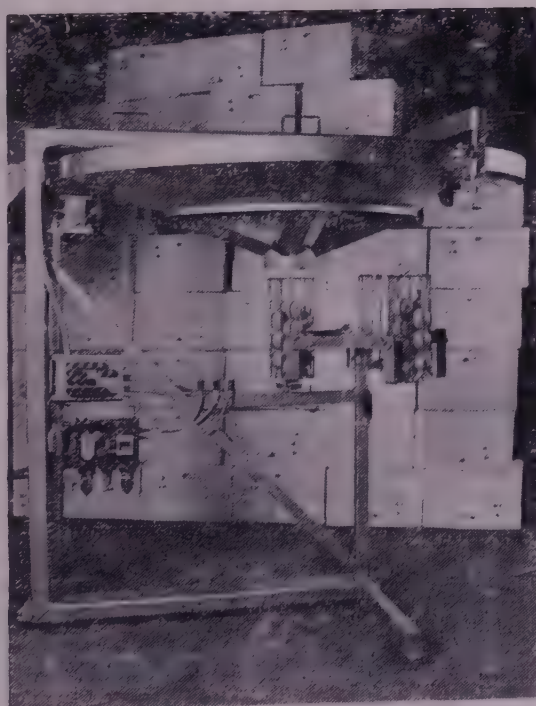
Naturally the more growers participating in the survey, the more reliable is the result.

ACGF appeals to growers to assist in this matter. If you are interested contact your District Secretary in the regions mentioned and obtain the necessary survey form for completion.

Complete confidentiality is guaranteed and all returns and relevant data will be returned to the grower when the survey has been completed.

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DDM FRUIT HANDLING EQUIPMENT INTRODUCES RADICAL NEW ORANGE PACKER (Patented)



The DDM Orange Bagger has been developed for use in the citrus packaging industry, to dramatically reduce the labour cost involved in packing the commonly preferred extruded net bag. This machine increases productivity while offering the advantage of attractive presentation of the packaged fruit.



The answer to attractive orange packing

FEATURES:

- Utilises extruded net bags, allowing fruit to breathe
- Dramatically reduces labour costs
- Packs fruit in the accepted 2' x 2' configuration
- No damage to fruit
- Offers attractive presentation of packaged fruit
- Packs up to 2400 kg per hour
- Simple Electro-Pneumatic control equipment ensures trouble-free operation

DDM FRUIT HANDLING EQUIPMENT

13 White Ave., Bacchus Marsh. Phone: Bus. (053) 67 3850; AH (053) 67 3796

Using Energy Wisely in Agriculture

Citrus growers can save money by minimising the amount of liquid petroleum fuels they use.

In October, 1979, the Commonwealth Government and State Governments of Australia implemented a national campaign to encourage Australians to conserve liquid petroleum fuels.

Why do we need to save oil?
What does 'saving oil' mean?
How can the farmer or grazier save oil?

THE ENERGY PROBLEM — WHY WE NEED TO SAVE OIL

The immediate energy problem is the dependence on liquid petroleum fuels because these are becoming less readily available and more expensive.

Agriculture is very dependent on oil. The price of this fuel is rising rapidly and supply problems will develop from time to time as it becomes increasingly scarce.

However, energy use is one of the things you can do something about. It is in your interest to conserve fuel to alleviate the problems associated with shortages, to maintain profits, and to remain competitive.

WISE ENERGY USE — WHAT 'SAVING OIL' IS ALL ABOUT

You can save our oil and your money through wise energy use by —

- substituting other energy forms such as LPG or electricity for oil wherever

practical and economic. In most places (other than the Northern Territory and remote areas) electricity is generated from non-oil fuels and is a good substitute for oil heating.

- conserving oil by using it more efficiently or less often.

REDUCING YOUR FUEL COSTS — HOW YOU CAN SAVE OIL

There are things you can do to help reduce your fuel bills. Savings of up to one third can be achieved without drastic measures. Here are three simple ideas:

- Cut waste.
- Become aware of your fuel needs by keeping a simple log of the type, quantity, and cost of the fuel used for each type of job. This 'energy audit' will show where you can economise most effectively.
- Work through the following suggestions. These should help you think of quick, cheap, and simple things you can do in your own particular situation.

FARM MACHINERY AND VEHICLES

Probably the biggest savings are made by cutting out wasteful habits like unnecessary use of large trucks or tractors. For odd jobs, such as inspecting stock or fences, a smaller vehicle such as a motor-bike will do.

Many jobs don't need a fixed order or routine. This lets you plan your farm work to save fuel and time. Planning to save fuel is a continuing part of both day-to-day and long-term decision making.

Save energy and time by avoiding double handling of produce and materials. For example it may be wise to have fencing materials delivered right to the fence line.

Planning your work to save unproductive travelling will save fuel. It may be possible to arrange to do all jobs at one end of the farm on the one trip.

In many cases it is more economical to use diesel equipment than petrol equipment, because the savings in fuel and maintenance more than offset the higher capital cost.

You can start saving fuel by keeping your motors in good condition and maintained for best performance according to manufacturers' specifications. In particular, ensure that fuel pumps and injectors are in good condition.

If you have a one-tractor farm, the tractor must perform the major operations, yet not be wasted on lighter work. The power rating of this tractor will depend on the demands of the major operations, but you can save fuel on the lighter jobs by operating in the highest gear possible with a lower throttle setting to obtain the required ground speed.

Switching off the engine, rather than idling it when the tractor is stationary for a long time, saves fuel.

Check the following points:

- Can you arrange your jobs (and loads) to avoid driving to the same place more times than necessary?
- Is the tractor the right machine for the job?

- Are you using a big tractor for a small job?
- If this is unavoidable, have you tried using a higher gear?
- Do you maintain all your machinery strictly in accordance with the manufacturers' specifications?
- Do you allow tractors (or any other motor) to idle for long periods?
- Losses resulting from evaporation or from expansion causing spillage can be reduced by storing petroleum fuels in white-coloured, shaded tanks. Do you do this?
- When installing or replacing fixed power equipment such as pumps or shearing plants consider electric motors in preference to petrol or diesel engines because electric power is often the cheapest in the long run. Remember also that diesel engines use less fuel and have a longer life than petrol engines.

FERTILISERS AND PESTICIDES

Energy is used in producing, distributing and applying these chemicals.

- Have you investigated what fertilisers are needed and when?
- Application equipment should be carefully calibrated. Applying too much fertiliser is not only a waste but can be harmful. Conversely, you are wasting fuel if you are not using enough fertiliser to give optimum yield.
- Have you thought out your pest control plan

Pesticides and energy are wasted when

- the pest is not vulnerable at that particular time
- the wrong pesticide is used
- the spraying equipment or the techniques are faulty.

Note: Pesticides should always be used strictly in accordance with directions, quite apart from any energy conservation consideration. Make sure you comply with the laws governing pesticide use in your State or Territory.

- Have you discussed the need for soil analysis with your Department of Agriculture?
- Have you conducted strip tests to find out the effects of additional fertiliser or of a different fertiliser on your particular land?

IRRIGATION

If you have to pump water remember that the energy needed depends on the quantity pumped, the efficiency of the pump, and the total head of water. Plan to keep pumping to a minimum, and seek advice on good irrigation practices from the Department of Agriculture.

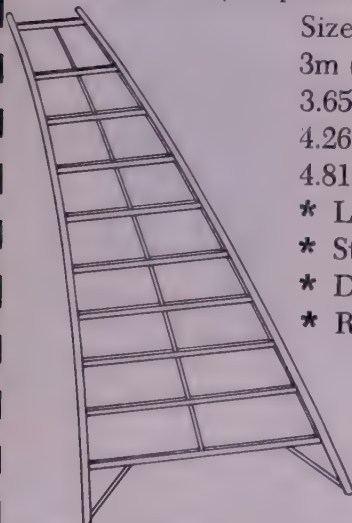
When installing or modifying an irrigation system these factors should be considered to minimise pumping costs. Low pressure and flood irrigation systems with precise land-grading and trickle systems use less energy than medium or high-pressure sprinkler systems. The costs and benefits for each system must be considered.

(Continued on page 12)

ALUMINIUM BOW LADDER

for citrus picking

Priced from \$118 plus freight.



Sizes

3m (10')

3.65m (12')

4.26m (14')

4.81m (16')

* Light

* Strong

* Durable

* Rustproof

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Tripod Ladders

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Pamphlets and further information
available. Trade enquiries welcome.

RECIPE OF THE MONTH

FABULOUS GRAPEFRUIT DIET

If you follow the simple principles of this diet, you can lose 9 pounds in about eleven days — the loss starting on the fifth day, with 5 pounds. Eat only what is listed, but eat all that is listed.

Note: Before starting on any diet, consult your doctor. This is most important if you are not in perfect health and if you have any dietary problems. You should be able to stay on this diet for as long as you wish, later adding a few other foods to see if you still lose weight — root vegetables, alcohol in moderation, etc.

BREAKFAST: $\frac{1}{2}$ grapefruit or unsweetened grapefruit juice;
at least 2 eggs and 2 rashers of bacon (you may eat as much as you want of these, cooked however you like);
1 cup black coffee or tea (no sugar).

LUNCH: $\frac{1}{2}$ grapefruit;
meat or fish (cooked as you wish and as much as you wish) and as much salad as you want with any dressing that has no sugar;
1 cup black coffee or tea (no sugar).

DINNER: $\frac{1}{2}$ grapefruit;
meat or fish cooked in any style, and as much as you want (you may have gravy, so long as it is not thickened with flour);
green, yellow or red vegetables and salad (as for lunch).

BEDTIME SNACK: Tomato juice or skimmed milk.

This diet enables you to eat nearly all that your family eats, with the exception of sugar and starchy food. You must not eat between meals; however, at each meal you must eat the combination of foods listed and you must eat all that you can.

These are the basic rules for success:
Grapefruit — you must eat this as it will start the essential fat-burning process.

Bacon — this combines with the eggs to burn up fat.

Salad — this has the same effect as the bacon, so do not leave it out.

Fat helps to burn up fat — this is the basis of the grapefruit diet — so you may use as much butter as you like in cooking and on vegetables and meat. But remember, no starches, no bread!

Fresh Citrus Exports

AUGUST SUMMARY

AUSTRALIAN FRESH FRUIT EXPORTS BY STATES (Tonnes)

	QLD.	N.S.W.*	VIC.*	S.A.	W.A.	TOTAL
Grapefruit	230.5	—	0.9	214.9	—	446.3
Lemons	28.4	1.7	214.0	49.0	47.5	340.6
Limes	0.1	—	—	—	—	0.1
Mandarins	266.0	1.6	311.2	122.2	—	701.0
Oranges	888.7	4.0	34.6	1761.3	2.8	2691.4
Tangelo	—	—	—	0.2	—	0.2
	1413.7	7.3	560.7	2147.6	50.3	4179.6

* Vic./NSW Border Districts.

AUSTRALIAN FRESH FRUIT EXPORTS BY DESTINATIONS (Tonnes)

	G-fruit	Lemons	Limes	M-rins	Oranges	Tangelos	Total
PNG & Solomon Islands	0.8	1.2	—	12.3	29.7	—	44.0
Pacific Islands	1.2	0.9	—	3.0	44.3	—	49.4
New Zealand	—	—	—	—	445.5	—	445.5
Indonesia	0.2	4.3	0.1	87.3	114.7	—	206.6
Singapore	4.3	31.4	—	126.0	696.5	—	858.2
Malaysia	—	2.3	—	—	200.6	—	202.9
Hong Kong	—	51.9	—	1.2	—	—	53.1
Philippines	—	3.7	—	—	1.6	—	5.3
Christmas Islands	—	—	—	0.7	—	—	0.7
Mauritius	—	—	—	18.0	—	—	18.0
U.A.E.	0.3	—	—	58.5	—	0.2	59.0
Bahrain	—	—	—	27.2	250.0	—	277.2
Kuwait	—	—	—	42.4	—	—	42.4
Saudi Arabia	—	—	—	81.5	—	—	81.5
Canada	—	26.9	—	86.2	—	—	113.1
Belgium	272.3	—	—	40.3	274.6	—	587.2
Holland	14.1	77.0	—	38.6	501.0	—	630.7
Norway	—	—	—	—	69.9	—	69.9
Sweden	—	19.2	—	—	—	—	19.2
Germany	—	—	—	—	12.6	—	12.6
France	122.4	121.8	—	77.8	50.4	—	372.4
United Kingdom	30.7	—	—	—	—	—	30.7
	446.3	340.6	0.1	701.0	2691.4	0.2	4179.6

IMPORTANT AUCTION SALE

OUTSTANDING CITRUS PROPERTY AT MORQUONG

Approx. 16.99 ha (42 ac.)
Freehold on Silver City Highway — Fully planted and all undertree irrigated.

DATE:

Friday, 2.30 p.m. 21st Nov. 1980

PLACE:

On the Property — Silver City Highway at Morquong

(Approx. 3 $\frac{1}{2}$ kilometres north from Buronga P.O. and 6 $\frac{1}{2}$ kilometres from Mildura (Vic.) P.O.)

To the order of Messrs. Edmanson & Sons

One of the finest citrus planted areas with under-tree irrigation in the Sunraysia District, comprising:— (Approx.)

10.5 ha (26 ac) (3800 trees)—Valencias
4.04 ha (10 ac) (1670 trees)—Navels (Wash. and Leng)
1.01 ha (2 $\frac{1}{2}$ ac) (247 Imps, 125 E'dale trees)—Mandarins
.81 ha (2 ac) (273 trees)—Lemons
.61 ha (1 $\frac{1}{2}$ ac) (87 trees)—Avocados

All plantings less than 20 years old, full bearing, vigorous and in great heart.

IRRIGATION: the property enjoys a PRIVATE DIVERTERS LICENCE under The Morquong Rural Co-operative Society (Shares to be transferred to purchaser).

TERMS OF SALE: 10% of the purchase price on the fall of the hammer and the balance on acceptance of title. Or ALTERNATIVELY, half deposit as ingoing and the remainder to be paid by annual instalments, plus interest at 12 $\frac{1}{2}$ % p.a. over 4 yrs.

SPECIAL REMARKS RE IMPROVEMENTS AND PLANT: There are no structural improvements upon the property to be sold, and no working plant is included in the sale.

INSPECTIONS: Strictly by arrangement with the Auctioneers:—

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67 Lime Avenue, Mildura.

Phone 23 0391 (5 lines)

BRAZIL'S CITRUS INDUSTRY

(Continued from page 6)

The Sao Paulo State Government also plays a major role in helping to improve citrus production techniques — via its research centres, universities, and extension services. Two noted State research institutions actively with citrus are the Campinas Agronomic Institute (IAC) and the Biological Institute. Research at the IAC, which operates the Citrus Experimental Station near Limeira, is aimed at improving plant genetics and cultivation techniques. Research at the Biological Institute is geared toward disease and pest control. Both institutes are part of the State Secretariat of Agriculture.

At present, the Sao Paulo State University system is not heavily involved with citrus research, mainly because of a lack of grants in this area. However, more money for citrus research is expected to be made available in the future. ASSO-CITRUS, a growers organization, has made firm plans to fund two university professors (at the campus in Jaboticabal) to conduct applied research in the area of citrus cultivation.

Sao Paulo State also operates agricul-

Sao Paulo State: On-Tree Prices for Oranges Processed, 1970-79

Season(1)	Price per box	
	Cruzeiros	US dol. (2)
1970	4.00	0.88
1971	5.30	1.03
1972	6.50	1.12
1973	9.00	1.49
1974	6.80	1.04
1975	8.00	1.01
1976	10.00	.95
1977	30.00	2.26
1978	36.00	2.04
1979	51.00	2.00

(1) Crop year beginning May 1 of indicated year. (2) Based on exchange rate as of June 30 of each year.

Source: Reports of Agricultural Officer, American Consulate, Sao Paulo, and the IEA.

tural extension centres in each of its municipalities. This State is the only one in Brazil that is not associated with EMBRATER, the national agricultural technical assistance and extension system. Sao Paulo's own system is closely integrated with its agricultural research programs.

Assistance to growers has also been extended through the National Campaign for the Eradication of Citrus Canker (CANECC), a Federal and State-supported program that was established in 1957. During the 23 years of the program's operations, about 1.7 million trees have been uprooted in Sao Paulo State on about 79,000 properties. Most of the removals occurred in the south western part of the State.

The total expenses of CANECC in 1978 in Sao Paulo were \$44.7 million cruzeiros (US\$25.4 million). Of the total outlay, the Federal and Sao Paulo State Governments contributed Cr\$5.2 and Cr\$3.0 million, respectively, and a grower and processor organization, FUNDECITRUS, contributed the remainder (about Cr\$9.5 million).

FUNDECITRUS was formed in 1977 with the objective of reinforcing the eradication effects of CANECC. The organization is funded by both the growers and processors in Sao Paulo State via a check-off system on boxes of citrus processed. For every box destined for a processing plant in the 1979 season, the growers contributed eight centavos (about 0.31 U.S. cent) and the processors contributed 25 centavos (about 10 U.S. cent) to the program.

To date, CANECC has been successful in preventing the spread of citrus canker to the commercial production centres, and presently the disease is not a problem, per se. However, it poses a serious threat to the citrus industry because it could spread to the commercial zone. Citrus canker is still prevalent in some areas, particularly in the States of Parana' and Mato Grosso do Sul, and need to be monitored constantly.

PRODUCTION OUTLOOK

By the mid-1980's, Brazil's FCOJ industry is likely to have the potential to export between 545,000 and 625,000 tons of concentrate. These levels are up substantially from the record 390,000 tons exported in the 1978/79 season (July-June) and double the average level of exports in the 1976 and 1977 seasons.

Supply and distribution potentials of FCOJ and CPP in Sao Paulo State can be derived for 1985, given the following assumptions:

- Orange output in Sao Paulo State will range between 220 and 240 million boxes by 1985.

- Domestic consumption of fresh oranges will increase at an annual rate of 3 percent from the average level obtained during 1976-78.

- Yields of FCOJ and CPP will remain constant at the 1976-78 average level.

- Domestic consumption of concentrates will total 50 000 tons.

- The percent of the total output of CPP exported in 1985 will remain constant at the 1976-78 average level.

Brazil: Average F.O.B. Price (Santos) of Frozen Concentrated Orange Juice

Month	1975	1976	1977	1978	1979
January	—	483	488	1,061	1,020
February	—	478	488	1,048	783
March	—	481	514	1,009	980
April	—	480	515	1,047	962
May	—	475	520	1,041	967
June	—	481	847	1,031	937
July	432	473	809	977	967
August	427	480	923	973	966
September	461	489	1,011	976	958
October	467	479	1,019	979	955
November	472	494	1,041	977	955
December	476	482	1,035	973	955

—Indicates data not available.

Source: Bank of Brazil/CACEX.

(Continued on page 11)

State of Sao Paulo, Oranges: Tree Numbers, Production and Prices, 1960-78(1)

Year	Tree numbers(2)			Production(3)		Processed(3)	Production of FCOJ(4)		Grower price(5)	
	Bearing(2)	Nonbearing	Total	1,000	1,000		1,000	1,000	Cruzeiros	US dol.
	Thousands	Thousands	Thousands	boxes(6)	metric tons	boxes(6)	metric tons	metric tons	per box	per box(7)
1960	13,594	NA	NA	14,400	588	—	—	—	—	—
1961	16,026	NA	NA	18,726	764	—	—	—	—	—
1962	17,012	NA	NA	19,200	784	—	—	—	—	—
1963	17,912	NA	NA	21,600	882	2,100	6	0.41	0.68	
1964	19,050	NA	NA	16,160	660	1,600	5	1.38	1.19	
1965	19,815	NA	NA	23,936	977	2,500	8	1.30	.71	
1966	21,550	NA	NA	29,856	1,219	4,200	14	1.50	.68	
1967	23,433	NA	NA	34,400	1,404	7,000	22	1.70	.63	
1968	25,435	NA	NA	35,560	1,451	10,000	33	2.40	.66	
1969	26,130	6,700	32,830	34,830	1,422	9,000	29	5.00	1.24	
1970	28,500	10,500	39,000	44,350	1,810	15,000	48	3.80	.83	
1971	30,800	13,200	44,000	46,000	1,878	23,000	80	5.50	1.07	
1972	34,700	15,500	50,200	60,700	2,478	34,000	107	7.00	1.20	
1973	40,000	16,500	56,500	62,400	2,547	35,000	121	10.00	1.65	
1974	44,000	26,020	70,020	82,000	3,347	49,000	170	7.00	1.07	
1975	55,600	18,680	74,280	84,700	3,457	53,000	189	7.80	.98	
1976	57,330	18,616	75,946	99,600	4,065	67,000	211	11.75	1.12	
1977	58,450	20,821	79,271	92,000	3,755	62,000	229	28.00	2.10	
1978	68,810	20,729	89,539	150,000	6,122	117,000	400	36.00	2.05	

NA — Not available.

— Zero or insignificant.

(1) Orange marketing year begins in April. (2) Plantings are thought to average 210 trees per hectare. Trees are usually considered to be bearing in the 4th year after planting. (3) May include some tangerines. (4) Frozen concentrate orange juice, 65° Brix. (5) Oranges for processing. (6) Boxes of 40.8 kg (90 lbs). (7) Using June 30 exchange rate.

Source: Sao Paulo Secretariat of Agriculture—Institute of Agricultural Economics (IEA); Reports of Agricultural Officer, American Consulate General, Sao Paulo, Trade.

BRAZIL'S CITRUS INDUSTRY

(Continued from page 10)

Output of FCOJ is expected to amount to 595,000 tons in 1985, if Sao Paulo's crop totals 220 million boxes, and 673 000 tons if the crop reaches 240 million boxes. Production of CCP would, in turn range between 748,000 and 832,000 tons.

A greater proportion of the total orange crop is expected to be processed in 1985 than during the 1970's and a greater share of FCOJ may be consumed domestically. Industry and trade sources in Brazil have indicated that this will be the case. The processing capacity in Brazil is rapidly increasing, and Brazilian sources are projecting a gradual upward trend in domestic consumption as new consumer products come on the market.

MARKETING PROSPECTS

Brazil is the world's dominant supplier of FCOJ, controlling 80-85 percent of annual exports of this product. An anticipated production growth of 45 to 60 percent by 1985 points to further gains in the export market. The extent to which exports increase, of course, depends heavily on the demand.

Through 1978 demand for Brazilian juice was strong enough to move all Brazil's exportable output. The situation changed in 1979, however. Because of a record high orange crop in Florida, U.S. demand for Brazilian FCOJ fell sharply below that of 1978. As a result, Brazil may not be able to sell all of its concentrate in the 1979/80 marketing year, so that Brazil's FCOJ

stocks could reach 90 000 tons by July 1980.

Despite this slowdown, all indications are that U.S. demand for Brazilian concentrate will regain its strength and continue at relatively high levels in the foreseeable future. Prices of domestic concentrate are not expected to subside to any considerable degree, and the trend toward increased consumption of orange juice, coupled with population growth, will help maintain sales in the United States. The U.S. Bureau of Census reports that U.S. population is likely to grow by ten percent over the next 20 years.

Trade prospects also are promising in Western Europe and Canada, at least until the mid-1980's. The Brazilians see per capita consumption increasing in both of these areas because of a trend in consumer preference away from fresh oranges to juice. Orange juice consumption in Canada for example, rose 84 percent between 1971 and 1977.

The current situation has made the Brazilians even more aware, however, of the danger of relying completely on traditional markets such as the United States, Canada, and Western Europe. Consequently, the industry is looking more seriously to Japan, Eastern Europe, and other nontraditional markets, as well as to its domestic market.

In a move to develop the domestic market a major U.S. firm and a Brazilian firm have launched a joint venture

to produce and distribute consumer-size packages of juice for local consumption. The consumer-size tetra-packs of concentrate and single-strength juice are currently being marketed in major population centres and appear to be selling well.

An abundant supply of citrus coupled with high capital investments in processing equipments, suggests that Brazil will continue to be in the forefront as a producer of frozen concentrated orange juice for several years. The future of the industry is contingent on many factors, including marketing patterns abroad and developments within the local market.

—"California Citrograph"

August, 1980

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Children's Drinks Causing Decay

Children's sweet drinks are causing serious dental problems according to the Australian Consumers Association.

When "Choice", the Association's magazine, tested the contents of 24 popular children's drinks, it found that Ribena, used principally as a drink for young children had the highest sugar content at 14.7 per cent weight by volume.

WATER FACTS AND FIGURES

The following facts and figures are often quoted:

- * Australia's mean average rainfall is 460 mm per year. World mean is 660 mm, U.S. mean is 740 mm.
- * The average annual discharge of the Danube alone is some six times as great as the estimated combined annual flow of all Australia's rivers. Yet only 8 per cent of Australia's total water resources are effectively used.
- * It takes 770 gallons of water to refine one barrel of petroleum.
- * It takes 4,500 gallons of water to produce three square meals a day.
- * It takes 65,000 gallons of water to turn out a ton of steel.
- * It takes 600,000 gallons of water to make a ton of synthetic rubber.

— Water Research Foundation
Newsletter.

This was not in its concentrated form, but in a dilute solution of one part Ribena to four parts water. Undiluted Ribena contained 73.5 per cent sugar.

The Association says: "The dangers of giving babies and young children health drinks' such as Ribena are being pointed out by dentists across Australia.

"The sugar content in these drinks is producing many serious and unnecessary dental problems."

An Association spokesperson has stated that the increased tooth decay in pre-school children was attributed to a rise in the number of drinks with sugar contents given in baby's bottles. "There have been cases of babies, only 12 months old, having to undergo general anaesthetic so that rotting teeth can be extracted.

"Dentists have said they have even come across mothers who add sugar to the baby's milk and even some who bottle-feed their infants with Tang and Coca-Cola."

Next on the list in sugar content after Ribena were four fruit-flavoured powdered drinks: Tang, Zest, Robinson Lemon Barley and Quench, with between 12.8 and 11.5 per cent sugar. Schweppes had marginally more than Coca Cola and Refresh slightly less in the soft drinks.

All the powdered water-drink bases and vitamin C supplements tested had a high sugar content.

USING ENERGY WISELY IN AGRICULTURE

(Continued from page 8)

In all irrigation systems, the efficient use of energy can be achieved by the efficient use of water. A good energy conservation and agronomic practice is to avoid over-irrigation of crops.

Use of electric motors to drive pumps is generally cheaper than either diesel or petrol engines. With liquid fuel prices rising faster than the cost of electric power the economics of electric motors for pumping installations are becoming even more attractive. Pumps should be operated at rated speed, and be of suitable design for the particular job.

- Do you over-irrigate? Irrigation practices for different crops vary. Investigate how your plants respond to seasonal changes in the times of application and amounts of water supplied.
- Is your irrigation system designed to use water efficiently? It may be possible, for instance, to irrigate at night to reduce evaporation.
- Do you use the correct pump for the job? Pump efficiency varies with flow and head. Ensure that you select pumps for maximum efficiency.
- Do you have records of when pumps were last serviced and overhauled?
- Do you have details of the manufacturer's recommendations and specifications regarding servicing and maintenance, and do you follow them?
- Have you checked your pipelines recently for leaking joints?

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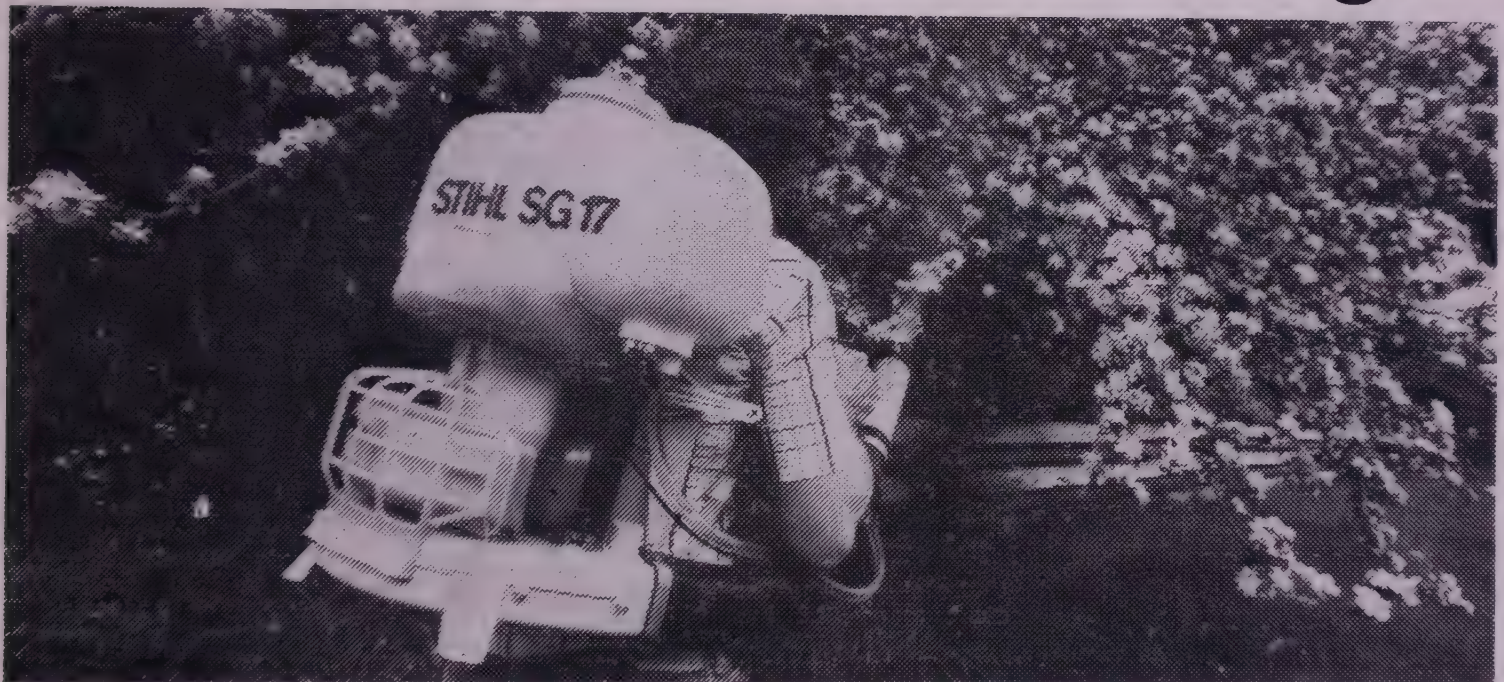
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CHINA - Citrus Diseases in People's Republic of China

By PATRICIA (Broadbent) BARCLEY, Senior Research Scientist, Biological and Chemical Research Institute, Rydalmere.

During November, 1979 Mrs. Barkley visited China as a member of a Citrus Research Group sponsored by the Australian Academy of Science and Academia Sinica. Other members of the Group were Mr. G. A. C. Beattie and Dr. Brian Freeman from the NSW Department of Agriculture and Dr. Rip Van Velsen from the SA Department of Agriculture.

Our visit to People's Republic of China made us realise how lucky Australia is to be relatively free of serious diseases of citrus.

The two major diseases of citrus in China are yellow shoot and citrus canker and both have devastating effects.

Yellow Shoot

Yellow shoot (huang lungping) was first recorded in 1919 but the old records of peasants claimed that yellow shoot was present in the last century or even earlier. The disease has seriously endangered citrus production in south China. For example, the disease first appeared in 900 hectares of citrus near Luizhou in 1963 and by 1967 the orchard had been destroyed by the disease.

Symptoms include yellow veins, yellow leaves, mottling, zinc-like deficiency patterns, "red nose" fruit and small lopsided fruit. Many of the leaf symptoms are similar to the disease we know as Australian citrus dieback but by contrast yellow shoot kills trees.

Graft transmission does occur but the main means of spread is the citrus psyllid.

The disease is caused by a mycoplasma or bacterium-like organism. So it is probably related to Indian dieback and South African greening and similar diseases in South East Asia.

Remission of yellow shoot symptoms for one year can be achieved by injecting the trees with tetracycline.

Controlling the vector is difficult because as many as eight generations of *Diaphorina citri* may occur in one year. It over winters in the adult stage and lays eggs in the very young citrus growth. Fortunately some citrus growing areas of China are free of the vector, but in areas where vector populations (and incidence of yellow shoot) were high, the economic feasibility of growing citrus is doubtful.

All citrus scion/rootstock combinations are susceptible to yellow shoot. Rangpur lime and Satsuma mandarin are a little tolerant. Many citrus are native to China and other native members of the Rutaceae e.g. *Murraya* are hosts for the citrus psyllid.

Citrus Canker

Citrus canker, caused by the bacterium *Xanthomonas citri*, is a very destructive disease. (It was introduced into the Northern Territory many years ago but fortunately was eradicated).

The bacterium attacks all young developing parts of the citrus plant. On young twigs, leaves and fruit, the lesions start as yellow and later become white pinhead sized eruptions, change to tan and finally turn brown. The margin becomes watery glazed and greasy and is greening to yellow brown producing a halo like effect.

Since canker requires a well distributed rainfall during which the temperature is in the range of 68°F to 90°F it would probably be more severe in NSW coastal orchards than in inland areas, if it ever becomes established in Australia.

All care must be taken to ensure that neither citrus canker or yellow shoot (or its vector) are introduced into Australia.

Other Diseases

Poncirus trifoliata originated in China, but the disease we frequently associate with this rootstock, namely exocortis or scalybutt, does not occur in China except in a few scions introduced from Algeria, USA and Morocco.

Tristeza virus occurs in China but appeared to be less severe than in Australia. No stem pitting was seen in pomeleas. In coastal areas, sweet orange are even grown on sour orange stock — a combination which would collapse due to tristeza decline in Australia. Apparently the Chinese have a tristeza tolerant sour orange "Gou-tou". We now have seedlings of this sour orange growing in quarantine and when it is cleared we will test its tristeza and *Phytophthora* tolerance and try it as a rootstock. It could be valuable for lemons and grapefruit.

Other diseases of unknown cause are:

1. A wilting of Satsuma mandarin which appears similar to young tree decline in Florida.
2. A yellowing of foliage and yellow ring at the bud-union of certain orange varieties on *P. trifoliata* rootstock. This could be caused by tatter leaf virus.

We didn't see much melanose, scab or black spot but these diseases can be troublesome especially as methods of spray application and close planting of trees make good spray coverage impossible.

Citrus Improvement

Some selection of improved varieties was

reportedly being undertaken but we found no evidence that a citrus improvement and multiplication scheme was being implemented for supply of budwood to nurserymen and growers. Many trees were showing sporting limbs or fruit.

— "Rural Newsletter", June 1980

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Irrigation Storages Report

SEPTEMBER SUMMARY

STORAGES	Capacity	Week ending
	Megalitres	25-9-80 Megalitres
Hume Reservoir	3,038,000	1,824,000
Lake Victoria	680,000	680,000
Menindee Lakes	1,794,000	1,203,000
Dartmouth Reservoir	4,000,000	1,969,000
Burrinjuck	1,026,000	(Aug.) 471,960
Blowering	1,628,000	(Aug.) 1,041,920

WATER FLOWING TO SOUTH AUSTRALIA (River Murray)

Week ending 25-9-80	32,000
Monthly entitlement for September	135,000
Total for September to 25-9-80	208,000
Total for August	370,000

WATER QUALITY (River Murray)

(Average quality for week—total dissolved solids in parts per million)

	25-9-80	26-9-79
Swan Hill	170	125
Euston	235	158
Red Cliffs	203	203
Merbein	244	221
Lock 9	204	210
Lake Victoria	288	258
Berri	228	276
Waikerie	366	402
Mannum	390	462
Murray Bridge	420	480

—Extracts from River Murray Commission Reports and NSW Monthly Weather Review

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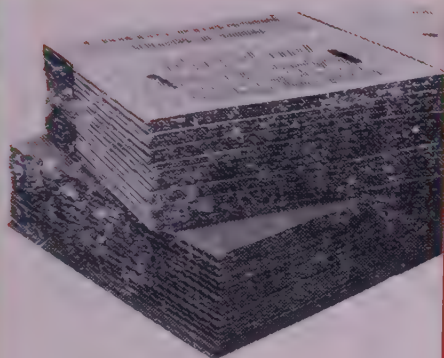
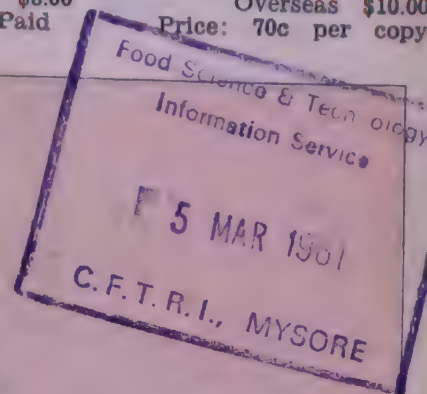
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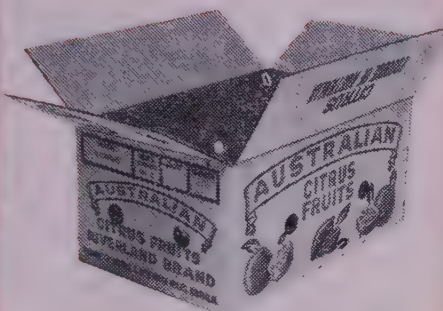
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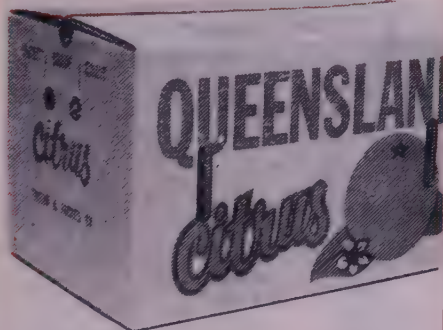
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EDITOR'S NOTE

Industry leaders are concerned about the future supply/demand situation on lemons and growers are urged to exercise caution in respect to future plantings.

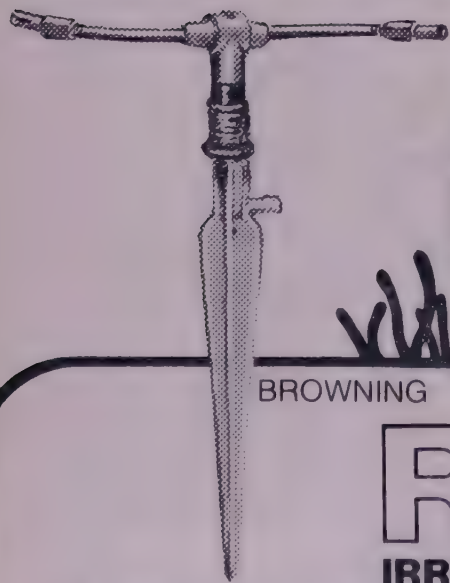
The 1980/81 lemon crop is forecast to reach a record 44,500 tonnes and with the export and domestic fresh fruit market expected to take about 18,000 tonnes this leaves nearly 27,000 tonnes for processing.

(Continued on page 3)

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INDUSTRY DOINGS

Executive Directors for N.S.W. Dept. of
Agriculture

The N.S.W. Department of Agriculture
has appointed four executive directors.

The positions will be held by Mr. Stan
Day, Mr. Jim Jessup, Dr. Stan Grimmett
and Mr. Graham Gregory.

The positions have been created as part
of a major restructuring of the Depart-
ment which has been announced by the
N.S.W. Minister of Agriculture, Mr. Jack
Hallam.

Mr. Gregory previously held the position
of Chief of the Division of Horticulture.

The top level administration of the
Department will now comprise Mr. George
Knowles as Director General, Dr. K. P.
Sheridan as Deputy Director General and
the four Executive Directors.

* * * *

Secretary Visits M.I.A.

Following on the A.C.G.F. meetings to
be held in Sydney 26/27 November the
General Secretary, Hugh Cope, will visit
the Griffith and Leeton areas to meet
growers and processors and to discuss local
citrus industry matters.

* * * *

ABC Television Personality Named Man of
the Year in Australian Agriculture

Mr. Neil Inall, compere of the ABC TV
rural programme "Country Wide" has been
named Man of the Year in Australian
Agriculture for 1980.

The award is sponsored by the Primary
Industry Newsletter and goes to the man
or woman who, in the judge's opinion, has
made the most outstanding personal con-
tribution to Australian agriculture.

Mr. Inall is recognised as the major
figure in media communication of rural
issues to rural and metropolitan people.

He was appointed as the first Director
of Communications with the Common-
wealth Department of Primary Industry
in 1973 and has been Chairman of the
National Agricultural Outlook Conference
since 1974.

One of the nominations for the 1980
Award was Mr. Tony English, O.B.E.,
General Manager of C.O.D. in Queensland.

Other nominations for the 1980 Award
were Ted Cole (Retiring N.F.F. Industrial
Director); Sir Joseph McAvoy (Cane
Growers Council); Peter McShane (Tas-

manian sheep farmer-inventor); Jim
Maple-Brown (sheep farmer); Barry Mil-
lett (Editor National Farmer); Bill Pyle
(Dairy Farmers Federation); Professor
Derek Tribe (School of Agriculture, Uni-
versity of Melbourne); and Professor Ken
Whiteley (C.S.I.R.O. - Textile Physics).

Previous winners of the Award are the
late Alf Maiden (Australian Wool Cor-
poration); Sir John Cass (Australian
Wheat Board); Geoff Miller (B.A.E.); and
Don Eckersley (N.F.F. President).

The Award for 1980 was announced by
the Minister for Communications, Mr.
Sinclair, at a function in Melbourne on
21st November.

* * * *

Reckett and Colman Buys Elmer Products

Reckett and Colman Australia Ltd. has
moved into the fruit juice business with
the purchase of Elmer Products Pty. Ltd.,
Sydney's first commercial chilled orange
juice producer, for an undisclosed sum.

The Directors have stated that the
business will be a division of the Colman's
food group of Reckett and Colman but will
continue to trade separately under the
management of the present directors. Mr.
John Meyers has been appointed General
Manager.

EDITOR'S NOTE

(Continued from front page)

One problem is that while lemons are
a popular citrus fruit with Australian
families just about every home has its
own lemon tree.

ACGF is considering the possibilities of
product research and is looking for ways
of increasing sales, both in Australia and
overseas but the present situation does
not look bright.

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NEW MEMBERS ELECTED TO COC

As a result of the recent COC election in South Australia there will be three new grower members on the Citrus Organisation Committee of South Australia.

Mr. Bill Davis of Winkie has been re-elected onto the Committee and the three new members will be Mr. Brian Fulwood of Waikerie, Mr. Gilbert Harrington of Kingston-on-Murray and Mr. David Ingerson of Berri.

The other present members of the Committee are the Government appointed members, Messrs Bob Floreani and Peter Logos, and the Chairman, Perc Sanders.

Mr. Davis has been a C.O.C. Board Member since 1968 and during this time has represented C.O.C. as an A.C.G.F. delegate, a Riv-Sam observer, a member of the Citrus Research Advisory Sub-Committee, a director of Citrus Management Company at Mildura, and as an observer on the M.C.G.C.A. Central Executive.

Mr. Fulwood is aged 52 and has been growing fruit at Waikerie for 37 years. He operates a 17 hectare property with 13.5 hectares of citrus trees.

Mr. Harrington was a member of the steering committee during the amalgamation of the fruit packing sections of the Kingston and Moorook Co-operatives in the Riverland area and has been Chairman of Directors of the resulting K.M. Fruit Packing Society Ltd. since its inception.

Mr. Ingerson is 39 years old and is a third generation Riverland citrus grower. He operates a property at Bookpurnong near Berri.

Successful Annual Meeting

The C.O.C. Annual Meeting held at Barmera on 31st October was attended by over 60 people.

The S.A. Minister of Agriculture, Mr.

Chapman, opened the meeting and said the major task of the new Committee would be to decide which recommendations in the McCaskill Inquiry Report on the Citrus Industry should have priority for introduction and legislation.

He said the Committee should make its decision on priorities in consultation with growers, packers and the Government.

In the Annual Report the Chairman, Mr. Perc Sanders, referred to the increased activity by C.O.C. over the past year in promotion and research.

He said that expenditure on promotion had risen from \$5,309 in 1978-79 to \$29,729 in 1979-80, while funds used for research had risen from \$5,609 to \$13,075 in the same period.

Mr. Sanders said that C.O.C. had continued to support the tripartite marketing efforts in the Eastern States. However, the activities of lorry operators supplying fruit outside the Melbourne marketing system had made it difficult to achieve price stability in that area.

He said that Court proceedings had been completed in respect of ten persons for contravention of the Act, Regulations or Marketing Orders, with five of the said persons having had previous similar convictions. In all cases the defendants were found guilty and fines totalling \$2,620 were imposed and paid to State Revenue.

The Chairman said that C.O.C.'s financial position was very satisfactory and despite rising costs and inflationary trends there would be no increase in the fees payable for funding C.O.C. in the coming season. These fees have not increased since 1977.

Citrus Consumption Rising

Provisional figures provided by the Australian Bureau of Statistics indicate that the apparent per capita consumption of citrus fruits for the 1978/79 year was 35.9 kilograms per head of population. This is a fresh fruit equivalent figure and includes the consumption of fruit juices. It compares with the 35.8 kgs per head recorded for 1977/78.

The A.B.S. Statistics show that oranges accounted for 28.0 kgs and the consumption of lemons, mandarins and grapefruit was 7.9 kgs.

Based on A.C.G.F. estimates, a possible break-up of the 1978/79 figures between fresh consumption and processed would be as follows:

	Fresh kgs	Processed kgs	Total kgs
Oranges	10.8	17.2	28.0
Lemons	1.4	1.7	3.1
Grapefruit	0.9	1.3	2.2
Mandarins	1.8	0.8	2.6
	14.9	21.0	35.9

Preliminary estimates by A.C.G.F. indicate that the consumption figures for 1979/80 will show a dramatic increase over previous years to a level in excess of 40 kgs per head of population with total fresh consumption dropping slightly to 14.5 kgs but consumption of

processed citrus products climbing to a record level of 26 kgs per head.

It is interesting to compare our Australian figures with those of the U.S.A.

In 1979 estimated total per capita consumption of citrus fruits in the U.S.A. was 51.66 kgs per head of population with fresh consumption at 11.26 kgs and juice consumption at 40.4 kgs.

NEW MEMBER FOR RIVERINA

In the recent Federal Election Mr. Noel Hicks, the National Country Party candidate, was elected to represent the electorate of Riverina in the House of Representatives.

The important seat of Riverina covers the major citrus growing regions in the Murrumbidgee Irrigation Area and also includes the extensive citrus growing areas on the N.S.W. side of the Murray River from the South Australian border almost to Tocumwal.

The seat was previously held for the Australian Labor Party by Mr. J. Fitzpatrick. Mr. Fitzpatrick did not seek re-election.

Mr. Hicks is a former Mayor of Broken Hill. During the election campaign he supported the need for the tariffs on imports of citrus juices to be implemented on a long-term basis to give citrus growers the confidence to plant new trees which required several years to reach maturity.

A.C.G.F. looks forward to working closely with Noel Hicks in matters concerning the citrus industry.

* * *

Other News from Canberra

A.C.G.F. welcomes the re-appointment of Mr. Peter Nixon as Minister for Primary Industry and looks forward to further establishing a close liaison with him on citrus industry matters.

Congratulations to Mr. Bruce Lloyd, the Federal Member for Murray, on his well deserved appointment as a Parliamentary Secretary and Assistant to the Minister for Primary Industry.

Bruce has been of immense value to the citrus industry and other horticultural industries in his role as Chairman of the Government Parties Horticultural Sub-Committee.

Congratulations also go to Mr. Geoff Giles, the Federal Member for Wakefield, which covers the Riverland citrus growing areas of South Australia, on his re-election to Parliament, and also to Mr. Peter Fisher, the Member for Mallee, which covers the citrus areas on the Victorian side of the Murray River.

Both Geoff and Peter have given strong support to the industry in the past and we look forward to their continued assistance in the years ahead.



Season's Greetings



The President, General Secretary and Staff of the Australian Citrus Growers Federation and "Australian Citrus News" extend to all citrus growers and their families and to advertisers, processors and our many readers and friends throughout the Fruit Industry best wishes for a Happy Christmas and a Prosperous 1981.

REVISED CROP ESTIMATES — 1980-81 SEASON

Information provided by A.C.G.F. Member Organisations and State Departments of Agriculture and Primary Industries has provided the basis for a revision of the Australian citrus crop estimates for the 1980/81 season.

The revised figures indicate that a record crop of 162,000 tonnes of Navel oranges has been harvested. This is 27,000 tonnes or 20 per cent above last year's estimated crop.

The present Valencia estimates are for a crop of 235,000 tonnes which is 26,000 tonnes or 10 per cent below the record 1979/80 crop as recorded by industry statistics.

The revised forecasts for Lemons, Mandarins and Grapefruit all indicate increased crops compared with last year's industry figures.

Lemons are forecast at 44,500 tonnes, up by 5,400 tonnes or 14 per cent on last year; Mandarins are forecast at 29,400 tonnes, up by 1,400 tonnes; and Grapefruit are forecast at 28,400 tonnes, up by 1,800 tonnes.

The revised total citrus crop estimates for the 1980/81 season now point to a new record production of 502,000 tonnes, which if realised, will be 11,000 tonnes or 2.2 per cent above the record crop of last year.

BAE COMMENCES SURVEY OF AUSTRALIAN HORTICULTURAL INDUSTRIES

The Minister for Primary Industry, Mr. Peter Nixon, has announced that field interviews for the Bureau of Agricultural Economics' annual survey of the horticultural industries would begin on November 17 in New South Wales, Victoria and Queensland. Field work in the other States will be undertaken progressively, with completion by the end of May, 1981.

The survey covers the Apple and Pear, Deciduous Canning Fruits, Multipurpose Grapes, Wine Grape and Citrus industries.

Mr. Nixon said some changes would be made to the survey this year, aimed at improving its timeliness and overall efficiency.

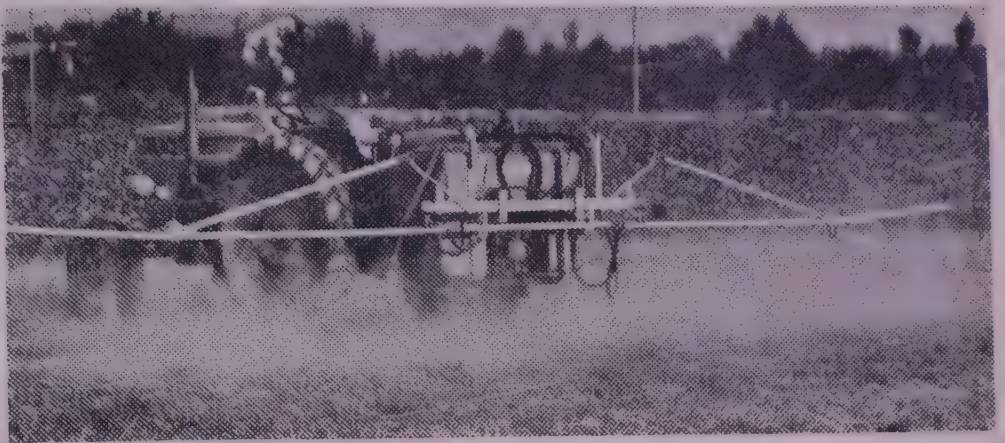
"The Bureau will in future survey the key horticultural regions, M.I.A., Riverland and Sunraysia in April and May each year, with preliminary estimates for those regions being available by the end of that calendar year, some ten months earlier than is currently the case," Mr. Nixon said.

"Other regions will be surveyed annually in the period from November to March."

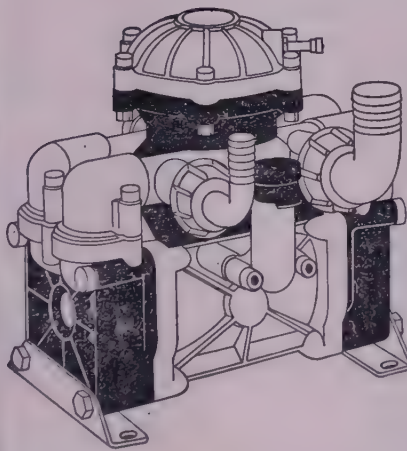
Mr. Nixon urged all producers selected in the survey as representatives of their industries to give the Bureau their full co-operation.

He stressed that the information supplied to the Bureau by co-operating growers would not be published or otherwise released in a form which could in any way be identified with individual growers.

DAVEY



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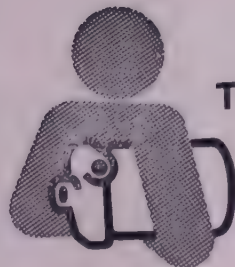
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AUSTRALIAN CITRUS NEWS

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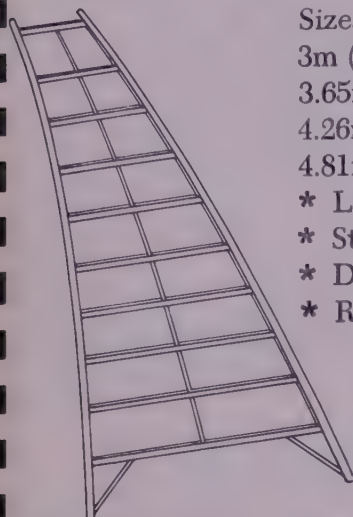
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A Quick Way of Establishing A New Orchard

By IAN S. TOLLEY, Renmark, S.A.

For many years America and Israeli citrus growers have been using Vermeer Tree Spades to shift big trees to new sites.

Recently a Tree Spade has been put into operation by a grower at Waikerie, S.A., and there is another in operation in Brisbane.

There have been numerous enquiries and interest in the potential of the unit for use by citrus growers in the Riverland districts.

The following comments may be helpful:

There is no physiological reason why citrus trees cannot be moved from one orchard site to another, providing the following guidelines are adhered to:

- 1. CONDITIONING** of the tree to be done well before the time of lifting. Root reduction can be done by ripping or using a narrow chain trencher outside the line of the proposed digging, which usually removes a four-foot square, tapering to a point 4 feet deep.
- 2. TOP PRUNING** should be done by removing 1/3 of tree height using a small handheld circle-saw commonly used by citrus growers in America, and increasingly here in Australia. An opportunity should be taken to shape the tree by removing "bumps" at the same time. Chain saws have been tried for this top pruning but are difficult to handle at height and tend to break too many small limbs.
- 3. SUNBURN** of the inner limbs, which are now exposed, is likely to be a problem in our hot summer. These limbs should be sprayed with a water-based white paint following the tree shaping and reduction.
- 4. TRANSPIRATION** lost at the time of digging can be restricted successfully by spraying the remaining part of the tree completely with an anti-transpirant, such as Mobil Cir-C just immediately prior to shifting.
- 5. PRE-WATERING.** The tree area should be flooded some hours before digging to make sure that the tree has as much water within its system as possible.
- 6. TIMING.** The best time for this work is in the very early Spring for each particular district. This will give the tree a chance to develop new roots and new shoots over the now bare inner limbs, and to get a good leaf cover before mid-summer. Once these new leaves have reached half to three-quarter normal size the trees should be sprayed with 3 lbs. Urea per 100 gal. and Zinc Manganese (either in powder or liquid form) at the appropriate rate recommended by the manufacturers.
- 7. IRRIGATIONS** should be closer than normal during the re-establishment of the tree to ensure that there is no possibility of the wilting point being reached.
- 8. CONSIDERATIONS.** There are some considerations which should be clearly understood before such a transfer is made.

The trees to be shifted must be in obvious good health, not more than 10-15 years old.

ROOTSTOCKS: Very careful consideration must be given to see that

the rootstock of the trees to be shifted is compatible with the new location; e.g., if **Sweet Orange** rootstock is being used then the new area must be free of problems with *Phytophthora* and *Nematodes*, and that the soil must be free-draining.

Troyer or Carrizo Citrange rootstocks will be generally satisfactory since they are generally tolerant of the above conditions.

Rough Lemon rootstocks, whilst generally vigorous, produce poor quality fruit, and this should be considered before using this stock as a transplant. In areas which can use *Trifoliata*; i.e., soils which are not alkaline, salt-prone or have Boron in excess, then this stock would be quite satisfactory.

- 9. RECOVERY TIME.** Given good growing conditions in the first year the trees should develop adequate fruiting wood to produce a reasonable crop in the second year. By the end of the second year the tree may well have recovered to produce a dense canopy and be in a substantial cropping situation.

- 10. COST.** The current hire cost for the Waikerie machine is \$150/day and the number of trees moved depends on the distance travelled between the source area and the new orchard.

Figures quoted to date indicate that from 10-20 trees per day are being moved but with good organisation on the part of the growers and the innovation of carrying-frames to speed up travel time, these figures may be speeded up.

At worst, however, tree cost for 10 per day of \$15.00 must be related to the current price of trees at about \$4.50, with a production delay time of approximately 4-5 years. Other considerations must include the suitability of the variety for current market conditions, cash-flow considerations, particularly within the growers current tax structure, and shelter comparisons against strong wind conditions.

The concept is worthy of serious consideration.

Recipe of the Month

FRESH CITRUS TUNA SALAD

1 package (3 ounces) cream cheese, softened; 2 to 3 tablespoons mayonnaise or salad dressing; 1 tablespoon fresh grated orange peel; ½ teaspoon pepper; 2 oranges, peeled, sectioned; 2 cans (7 ounces each) solid pack tuna, drained, chunked; 2/3 cup sliced celery; ½ cup sliced almonds, toasted; lettuce cups.

In large bowl, combine cream cheese, mayonnaise, orange peel and pepper. Gently stir in orange sections, tuna, celery and almonds; chill. To serve, spoon tuna mixture into lettuce cups. Makes 6 servings (about 5 cups).

Horticultural Council Supports Plant Variety Rights Scheme

The Annual Meeting of the Australian Horticultural Growers Council held in Sydney on 13 November agreed to strongly support the early introduction of a Plant Variety Rights Scheme in Australia.

The meeting was advised that the Minister for Primary Industry would table the draft legislation early in 1981 to allow public discussion on the proposal.

In a statement issued in July of this year the Minister indicated that the scheme would be an entirely voluntary scheme and should encourage the development of a wider choice of plant varieties in Australia.

He said that this would be of benefit to plant breeders and, more importantly, to Australian agriculture as a whole.

The Minister said that some 25 countries have already developed plant variety rights schemes, and Australia was able to draw on all of that experience in formulating the best possible scheme for its needs.

The A.H.G.C. meeting noted that strong opposition appeared to be coming from an anti-plant variety rights lobby and also from sections of the grain seed industry.

It was decided to closely monitor the situation and, if necessary, to strongly advocate the introduction of the scheme for plants only, if the present opposition was maintained.

Opposition to Value Added Tax

The A.H.G.C. Annual Meeting reiterated its strong opposition to any introduction of a Value Added Tax due to the serious effect it would have on the costs of pro-

ducing horticultural produce and the increase in retail food prices.

Trade with New Zealand

The Meeting confirmed the appointment of Mr. Gordon Wilson to represent the Council on a National Farmers Federation Delegation to visit New Zealand early in December for discussions with N.Z. Government and Industry representatives on the development of a closer economic and trading relationship between the two countries.

Mr. Wilson is a member of the A.H.G.C. Executive Committee and represents the Australian Vegetable Growers Federation on the Council. He is also an Executive member of C.O.D.

The Council has allocated \$1,000 from its reserve funds to cover Mr. Wilson's expenses.

The visit to New Zealand follows an in depth tour of New Zealand by N.F.F. President, Don Eckersley.

He expressed his concern that the fruit and vegetable industries be represented in talks with the Federated Farmers of New Zealand and other private and Government organisations.

According to Mr. Eckersley it was apparent during his tour that the biggest bone of contention in trans-Tasman trade, apart from the dairy industry, was in horticultural products.

A.C.G.F. Secretary Re-elected President

A.C.G.F. General Secretary, Hugh Cope, has been re-elected unopposed as President of the Council for 1980/81.

Other officers elected at the Annual Meeting were: Vice-President — Eric Lacey (Co-op. Almond Producers); Committee — Don Kidd (C.O.D.), John Miller (Mushroom Growers), Gordon Wilson (Vegetable Growers).

The President was also appointed to represent the Council at the National Farmers Federation.

The Council has again contracted with Brian Newman and Associates to carry out the secretarial duties.

Income Budget

The Council adopted an income budget for 1980/81 of \$11,700. A.C.G.F.'s membership contribution will be \$1,500. This budget illustrates the very limited financial situation under which the Council operates.

Other Matters

Other general matters considered at the Annual Meeting included the Nitrogen Subsidy, Fuel and Energy Matters, N.F.F. Matters, Progress on the Establishment of a General Horticultural Panel, Disaster Crop Insurance, Publicity on the Need to Use Chemicals in Agriculture, Plant Quarantine, Concessional Postage and the Council's Newsletter.

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FERTILIZERS FOR

By BEN ROBINSON, Senior Research Officer (PL)

The Table in this article summarizes the common-sense fertilizer requirements of an average citrus orchard. Growers will modify the information to suit their own conditions but this should be done carefully.

For example, if a grower prefers to use mixed fertilizers, such as 10:4:4, he should base the amount used on the nitrogen needs of his trees and the nitrogen content of the mixed fertilizer. He may

have a good season and feel an investment in extra superphosphate to be sensible even though leaf analysis data show no immediate need. His trees might be single spaced but very vigorous and need higher rates of nitrogen than trees of normal vigour.

Fruit Quality

It is well known that each of the nutrients can affect fruit quality in different ways.

For example:

- High nitrogen can increase regreening of Valencias, increase peel thickness and at the same time reduce juice percentage.
- High potassium can increase fruit size, reduce peel quality (thickness, texture, colour) and reduce crinkle skin.
- High phosphorus can decrease peel thickness and improve factors of internal quality (juice percentage, TSS).

Table: The common-sense fertilizer requirements of an average citrus orchard.

Nutrient	Approach	Amount of element	Form of fertilizer	kg/tree	Fertilizer rate kg/ha*	When
Nitrogen (N)	maintenance—	0.5 to 0.75 kg per single planted tree annually.	urea (46% N)	1.0 to 1.6	185 to 300	Late winter early spring before main growth flush.
			ammonium nitrate (34% N)	1.5 to 2.2	200 to 400	
			sulphate of ammonia (21% N)	2.5 to 3.6	460 to 650	
Phosphorus (P)	corrective— (for trees)	86 kg per ha infrequently (each 3 to 5 years).	superphosphate (8.6% P)	5.4	1,000	Timing not important.
	maintenance— (for cover crop)	30 kg per ha annually to every three years.	superphosphate	1.9	350	At seeding or late autumn.
Potassium (K)	corrective—	500 to 1,000 kg per ha (experimentally only).	sulphate of potash (41.5% K)		1,250 to 2,500	Timing not important.
	maintenance—	80 kg per ha annually.	sulphate of potash (41.5% K)	1.0	200	
			potassium nitrate (13% N, 38% K)	3 kg/100 L		When growth flush 2/3 expanded.
Magnesium (Mg)	correction of severe deficiency		epsom salts‡ calcium nitrate	2 kg/100 L 2 kg/100 L		During growth flush and then at four-week intervals.
Manganese (Mn)	maintenance—		managanese sulphate or managanese sulphate solution*	100 g/100 L 200 mL/100 L		To 2/3 expanded growth flush
			(17.3% Mn w/v)			
Zinc (Zn)	maintenance—		zinc sulphate or zinc sulphate solution**	100 g/100 L 200 mL/100 L		To 2/3 expanded growth flush
			(16.7% Zn w/v)			
			or zinc oxide	100 to 200 g/100 L		

*Assume 185 trees/ha — increase the hectare rate by about 20 per cent for double planted trees. The upper hectare rate for

*For example, Magnasol-C.(R)

**For example, Zincsol.(R)

‡For example, ZM.(R)

RIVERLAND CITRUS

South Australian Department of Agriculture.

The over-riding influence on fruit quality is not nutrients but rootstock and climate. It is not sensible, therefore, to expect to greatly improve fruit quality factors such as TSS in juice by withholding fertilizers without severely decreasing yield.

The mallee soils of the Riverland are naturally low in nitrogen and phosphorus and do not make zinc and manganese readily available to citrus. It is unusual,

however, to find an orchard in the Riverland that is low in phosphorus because of the large amounts of superphosphate used in the early 1970's.

How long this super will remain available to trees will only be known with time. To be on the safe side a follow-up corrective dressing in a band every three to five years should be applied unless leaf analysis shows it is not needed.

Potassium (K) is well supplied by most mallee soils and there are few orchards at present that are low in it. To ensure that trees on the lighter soils (that is, deep wind-blown sands) do not run out of potassium, a close watch is needed using leaf analysis.

Growers who are concerned about their fertilizer practice should check how their trees are doing with a leaf analysis every few years (see Fact Sheet No. 23/80 Leaf analysis of citrus).

The Common-sense Approach

Various approaches to citrus nutrition have been advocated in the past. "Balanced" applications of NPK fertilizers were popular until we learnt something about the way phosphorus behaves in our soils. This approach was followed by programmes based on distinguishing between maintenance applications of those nutrients that are needed every year and corrective use of nutrients that require infrequent but massive doses to get them to move into the rootzone.

Drip Irrigation

It is easy to leach nutrients from the rootzone with drip irrigation. Nitrogen is particularly susceptible and should be applied through the irrigation system as urea. This should be done frequently, at least before and during each growth flush. Continuous feeding at each irrigation is a safer approach.

Phosphorus should be applied either as solid superphosphate beneath each dripper, or in the irrigation water using a soluble NP feed available commercially (for example, Topsol 15:6:0(R)).

Micro-jet Irrigation

Although there is not much accumulated experience, the hazard of leaching exists as much or more with microjet as with drip irrigation because water application is localized.

For nitrogen, either use the strategy of "little and often" as recommended for use with drippers or supply the nitrogen as a "slug dose" with the irrigation water as recommended for use with sprinklers. That is, apply nitrogen with the water about two-thirds through the irrigation period to avoid losses. If surface application is unavoidable make sure the whole wetted area receives nitrogen.

Superphosphate should be spread over the area of soil wetted by the microjets rather than outside the canopies of the trees.

Organic Materials and Animal Manures

Organic materials and animal manures
AUSTRALIAN CITRUS NEWS

differ from batch to batch but as a rule of thumb these values can be used to compare prices:

	kg/tonne		
	N	P	K
winery marc	16	3	28
fowl manure deep litter	25	12	15
cage	40	30	16
NPK 10:4:4 (for comparison)	100	40	40

Low-volume or Aerial Application of Foliar Sprays

The trend away from high-volume sprayers has seen some poor responses to foliar sprays of micro-nutrients. While there is no experimental work to prove it, the important factor seems to be the quantity of zinc or manganese applied to the hectare. High-volume machinery applies about 7,000 L a hectare and low-volume machinery about 3,400 L.

If low-volume equipment is used there is a good case for doubling the concentration of zinc and manganese in the spray tank, particularly when the control achieved with the recommended rates is not satisfactory. Ensure application is made at the correct growth stage. There have been no reports of damage from growers who have been doubling the concentration but it is well to remember that zinc sulphate and manganese sulphate are acidic and can burn leaves at concentrations only a little higher than the double rate.

Experience in S.A. with aerial application of foliar sprays is limited but for maintenance sprays the approach is to apply about 50 to 100 per cent of the quantity of chemical that would be applied from the ground. (That is, about 4 to 7 kg each of zinc and manganese sulphates and 25 to 50 kg of urea a hectare, or, in other words, about 12 to 25 L Mangasol Zinc(R) and 25 to 50 kg of urea a hectare).

Lemons and Grapefruit

The rates given in the Table are for Valencias and Navels. Lemons have a greater need for nitrogen (up to as much as 1 kg a tree) and potassium (leaf analysis can help).

Large grapefruit trees need slightly more nitrogen than shown in the Table.

Young Trees

"A little and often" is the message. About 1 kg of NPK 10:4:4 for each year of the tree's age should be split into three applications a year and spread over the area of soil covered by the foliage. From year four onwards the fertilizer should be spread along the tree line area.

After about seven years, fertilizer can be applied at the lower mature tree rate given in the Table. It can be applied in the normal way because by then roots should have explored the whole orchard area.

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	Comment
ver or apply nklers rough a period.	If drip irrigation see notes. If microjet see notes. If through sprinklers apply about 2/3 through irrigation. Use cost per unit of nitrogen to choose form.
ubsurface ring oncentra- est. tracks.	If drip irrigation see notes. If microjet see notes. Check need for P with leaf analysis as there is no good information on the residual value of heavy super dressings.
if sow- adcast g esta-	A soil test value for extractable P of less than about 30 ppm indicates a need for topdressing with super.
nd to il.	Seldom needed in SA soils but deep sands are worth watching. Use leaf analysis for two consecutive years to determine need. Only use experimental applications and check with leaf analysis. Can be tried against crinkle skin. May delay colour or enhance regreening.
(high-	Mild deficiency may respond to increased nitrogen application and, if necessary, a half strength foliar spray during growth flushes.
pre-	500 to 700 g/100 L of urea may be added to enhance uptake.
wetter.	Two sprays a year are needed if deficiency symptoms persist. For low-volume or aerial application see notes.
pre-	May be mixed with manganese sulphate.
wetter.	A corrective spray of double-strength zinc oxide or two sprays of zinc sulphate a year are needed if deficiency severe. Combination solid [§] or liquid [†] zinc manganese sprays are available.
ide	Use cost per unit of trace element as a factor in deciding which to use. For low-volume or aerial applications see notes.

ut the normal double plant rate.

†For example, Managasol-Zinc.(R)

Record 1980 Orange Crop Forecast in Brazil

The 1980 Brazilian orange crop is forecast at 8.8 m metric tons, up ten per cent from last year's record output. Brazil also produces around 1.5 m tons of tangerines and limes. The State of Sao Paulo accounts for four-fifths of Brazil's orange crop. The State's bumper orange crops of 1978, 1979 and 1980 are due to increasing numbers of young trees coming into bearing age. There are now an estimated 110 million orange trees in Sao Paulo, of which 26 million are not yet bearing.

Forecasts for Sao Paulo's 1980 harvest vary from 155-195 million 90 lb. (40.8kg) boxes. At this time the most likely outcome seems to be around 170 million boxes (6.9 million tons), an increase of 13 per cent over the 1979 level.

In November 1979 citrus canker was discovered for the first time in the commercial citrus zone of Sao Paulo. The disease has so far been confined to two municipalities (counties). Following the initial discovery, the State Government organized 200 three-man teams to inspect groves and to destroy diseased and suspect trees. Measures continue to be taken to

assure that field boxes, vehicles, and other equipment from infected areas are properly disinfected before leaving these areas.

The bulk of Sao Paulo's oranges are processed, but oranges from other States as well as most tangerines and limes are destined for the domestic fresh fruit market. Orange exports, which all originate in Sao Paulo, are relatively minor in importance, but have been increasing. Fresh orange exports during the past two calendar years were 45,400 and 89,600 metric tons. Major buyers included: Netherlands, United Kingdom, Germany, West, Other Europe, Argentina, the Middle East and Other Countries.

Exports in 1980, thanks to the large crop and expanded packing-shed capacity, are expected to register another big gain.

During the 1979 season, 119 million boxes (includes 2-5 million boxes of tangerines) of oranges — 79 per cent of Sao Paulo's production — were processed for frozen concentrate orange juice. Concentrate production (at 65° brix) was 405 000 metric tons, a slight increase over the previous season. Exports of concentrate, however, fell from the 387,000 tons shipped during the 1978 season (July 1978-June 1979) to an estimated 330,000 tons during the 1979 season. Allowing for domestic consumption this leaves stocks for the season ending June 30, 1980, at about 60,000 tons — an unusual situation for Brazil's orange juice industry. The decline in exports is due mostly to fewer shipments to the United States. In CY 1979, exports to the United States were only one-half the level of the previous year.

Sao Paulo's 1980 season opened in an uncertain atmosphere. Growers and processors were unable to agree among themselves about how to manage likely additions to the growing stockpile of FCOJ. The Brazilian Government insisted that the processors formulate an orderly marketing and stockpiling plan within the following constraints:

- 1) The entire 1980 crop must be harvested and utilized.
- 2) Export prices must be maintained at no less than \$900 per ton.
- 3) Growers must receive satisfactory compensation.
- 4) The Government would not help to finance the plan.

The processors were not able to agree upon a plan, so the final decision on 1980 marketing policy was left to the Government. Details are not yet available, but the Government apparently is requiring all processors to store one ton of concentrate for every ton exported. The grower price for oranges at the beginning of the 1979 season was equivalent to about \$2.00 per box on the tree, but a 90 per cent rate of inflation reduced real grower returns. The 1980 price has reportedly been set at 90 cruzeiros per box, equivalent to US\$1.75 at the July 1, 1980, exchange rate.

Given the large number of non-bearing trees, orange production in Sao Paulo is almost certain to continue rising over the next two to three years. But the optimism that permeated the industry a year ago has faded. If grower prices become unattractive during the next few years, orange production could begin to level off due to

declining input use and some shift out of citrus and into other crops, especially sugarcane.

Most Brazilian Government aids for FCOJ exports have been eliminated. Export tax credits, worth 16 per cent of the f.o.b. value as of July 1979, were eliminated in December, 1979. Subsidized financing for production of FCOJ is now available for an amount equal to 12 per cent of the value of the previous season's exports compared with 30 per cent last season. The income tax exemption for profits earned from export operations remains.

Beginning in December, 1979, the Government imposed an export tax on FCOJ. The tax, initially set at \$105 per ton was later reduced to an 8 per cent ad valorem rate. As of June 4, 1980, the tax was again altered to a fixed rate of \$210 per ton, which is to be lowered by \$15 every 15 days until it disappears in December, 1980. The new tax schedule is reportedly intended to help hold the price of FCOJ exports at or above \$900 per ton.

There are now 12 FCOJ plants in place in Sao Paulo including one small plant beginning operations this season. These are controlled by seven firms, with the four largest accounting for 95 per cent of installed capacity. Two new companies are reportedly scheduled to open small plants before the end of this season. As of April 1980 there were approximately 553 orange juice extractors and 2.1 billion pounds per hour of evaporating capacity in place in Sao Paulo, gains of 51 per cent and 37 per cent, respectively, over April 1979 levels. The industry now has the capacity to process nearly 200 million boxes of oranges per season.

Trade in Citrus Juices

World trade in citrus juices, especially for FCOJ, which is dominated by Brazilian exports, appears to be down during the current season. The principal cause is the bumper Florida orange crop, which lowered Florida imports of FCOJ from December 1979 to mid-June 1980 to about half of the previous year's imports for the corresponding period. During the first half of the 1979/80 season, Florida's exports were moving at about the same rate as those of the previous year.

Canada's imports of FCOJ during 1979 were up almost eight per cent over those of 1978. The increase was due entirely to shipments from the United States. After adjusting for the difference in brix between US orange juice and that of other suppliers, the US share of the Canadian market was about 38 per cent in 1979, up from 32 per cent in 1978, but still below the 47 per cent share registered in 1977.

Japan is still a relatively small market for orange juice and grapefruit juice, but scheduled increases in its important quotas make it a growing market. The US share of this market was 71 per cent in 1978 and 44 per cent in 1979.

— "Citrograph", California
September, 1980.

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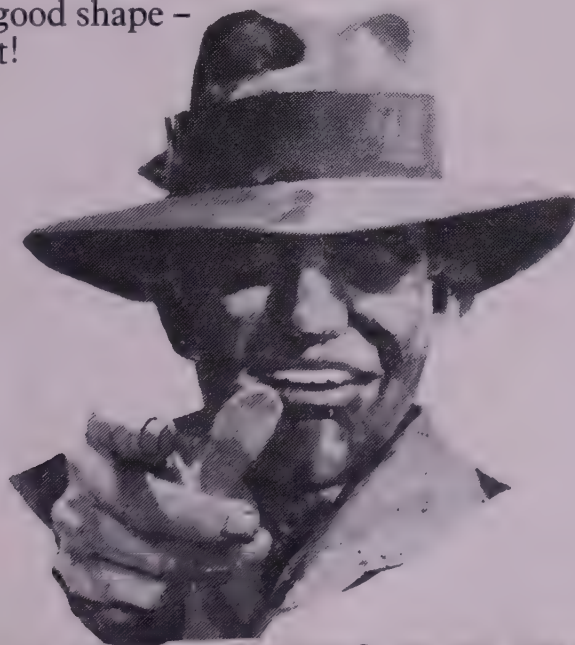
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DP 122

REPLANTING CITRUS

By **PATRICIA BARKLEY**, Senior Research Scientist, Biological and Chemical Research Institute, Rydalmere, NSW.

Citrus trees may grow poorly when replanted on soils that have been under citrus cultivation for 10 years or more.

This poor growth may be due to a number of causes:

1. Phytophthora root rot,
2. Citrus nematode,
3. The "replant problem".

1. Phytophthora Root Rot

You are all aware of the severe effects the fungus *Phytophthora* can have on citrus in overwatered, or poorly drained soil. Root rotting may result in susceptible rootstocks or collar rot of the scions.

If the soil is heavy or inadequately drained, or if there has been any *Phytophthora* in the previous citrus, then when you replant you should use a *Phytophthora* resistant rootstock.

"Tri" (*Poncirus Trifoliata*) is highly resistant and the citranges moderately so.

Preplant fumigants such as Ditrax, methyl bromide, chloropicrin etc. will eliminate *Phytophthora* if applied correctly but the fungus is rapidly reintroduced in irrigation water, on tractors, in field grown nursery trees etc.

Cover cropping, if maintained for several years will depress populations of *Phytophthora* but will not eliminate it.

2. Citrus Nematode

High populations of citrus nematode (*Tylenchulus semipenetrans*) are usually present in old citrus orchards.

Newly planted trees are attacked when new roots are produced. As Dr. G. Stirling (Nematologist, Loxton) recently pointed out, often the damage may not be obvious and replanted trees may appear healthy. Replanted trees infested with citrus nematode grow slowly and production during the first few years is unnecessarily low. Whenever citrus is planted following the removal of citrus, grapes and olives, it is possible that replant problems caused by citrus nematode will be encountered.

Control measures which should be adopted are:

1. Use clean nursery stock.
2. Delay replanting and cover crop.
3. Use resistant rootstocks — *Poncirus trifoliata* is moderately resistant. The resistance of citrange rootstocks varies according to the biotype of citrus nematode present. Citrange rootstocks generally maintain high nematode populations although not as high as sweet orange and rough lemon (Table 1). However it is recommended for use in replant situations because it tolerates high numbers of citrus nematodes without adverse effects on yields.

Table 1:

Stock	Mean No. <i>Tylenchulus</i> /500g soil
Citrus nematodes under four rootstocks of Lane's Late Navel Trees Planted 1969, Somersby Horticultural Research Station. (Data supplied by R. McLeod).	
Rough lemon	29 500
Symons sweet orange	23 800
Troyer citrange	14 600
Tri 22	0

4. Preplant fumigation with Telone II(R) DD(R) or EDB.

There are no nematicides currently registered for use on established citrus against citrus nematode. "Nemagon" (DBCP) is no longer registered for use on citrus in New South Wales. Mr. Rod McLeod Nematologist at the BCRI Rydalmere

has found that in trials at the Horticultural Research Station, Somersby. "Nemacur" (43% concentrate) applied at 130 ml per tree in a 2m radius around each tree controls citrus nematode.

3. Unfavourable soil microbial population = "replant" problem

Troyer citrange performs poorly in the heavy Curlwaa soils, even in virgin sites, but performance is worse in old grape land and very poor in old citrus land. Nematodes and root rot are not the cause of the poor growth. "Tri" is growing well by comparison in the replant situation. Observations in the Curlwaa area have shown that fumigation of replant sites with DBCP (Nemagon (R)) will improve the performance of Troyer citrange as a rootstock.

But depressed growth also results when *Poncirus trifoliata* is used as a replant stock, even though it is resistant to both nematodes and *Phytophthora* root rot. e.g. this is evident on the Central Coast where virgin land (e.g. a former pine windbreak) is cleared and planted at the same time as a citrus replant site. The citrus replant problem is more marked where Troyer citrange is used as a replant stock on heavier soils.

The citrus replant problem has been studied in the USA since 1948. After citrus trees have been grown on some soils for several years, the yields begin to diminish, the trees become less thrifty, abnormal dieback occurs and new growth is slow. When young trees are replanted in such groves, growth is very slow compared with that of similar young trees in non-citrus soil.

In South Africa, the citrus replant problem is in part associated with the large populations of the citrus nematode *Tylenchulus semipenetrans*. Soil conditions such as alkalinity, salinity and heavy texture are normally associated with the replant problem in South Africa. The problem is prevalent in a wide range of soil texture classes but experience has shown that it is more serious on heavier soils.

In studies conducted at Riverside, USA, old citrus and non-citrus soils were fumigated in the greenhouse and the field using five different fumigants. Marked improvement in growth of trees in fumigated soils occurred. In some cases growth was nearly doubled. In these tests, fumigation did not change the level of any nutrient from a deficiency to a sufficiency level. It was inferred from this that the increased growth in old citrus soils after fumigation must have been caused by destruction of detrimental soil organisms and not by changes in nutrient status of the soils.

In USA there were indications that Troyer citrange could be successfully used on old citrus land previously planted to rough lemon. However once Troyer citrange has been used no other rootstock except tri could be successfully grown on the same soil.

A 1-year rotation to a different crop increased growth considerably when sweet orange seedlings were subsequently planted in the soil. Grasses appeared to be most effective but the growth of the citrus did not approach that of seedlings in non-citrus soil.

In South Africa when old citrus land is to be replanted to citrus it is recom-

mended that the land be either fumigated or deep ploughed or a combination of both.

Effects of Fumigation

Fumigation or the application of a nematicide will generally give an increased growth response due to (a) elimination of soil borne pathogens (b) increased NH₄+4 availability (c) increased phosphate availability (d) alteration of soil microflora.

For example, following application of DBCP (Nemagon (R)) to a citrus soil in the Mildura area, nematode populations were greatly reduced, bacterial populations increased, and NH₄+4 levels were raised 10-fold (Table 2).

Table 2:

Soil	Tylenchulus 250g soil	Total bacteria/ gm soil	NH ₄ + —N
Untreated	808	17 x 10(4)	0.7
Treated	4	53 x 10(4)	10.6

But fumigation may produce a decreased growth response in young citrus due to (a) toxicity of the residual fumigant; (b) elimination of mycorrhizae; (c) recontamination of treated soil by plant pathogens.

Fumigants vary in their effect on v.a. mycorrhizal fungi. This is shown in Table 3 where the soil used was a sandmount sand from Cudgel (MIA).

Table 3:

Effect of soil fumigation on growth and vesicular-arbuscular mycorrhizal infection of rough lemon seedlings.

Treatment	Dry weight of tops g	Leaf area cm ²	Mycorrhizal infection % (°)
Untreated	2.48	327.6	96.4 (79.1)
Chloropicrin	2.08	219.2	60.7 (51.2)
Di-Trapex	2.07	212.8	85.9 (67.9)
Basamid	1.35	164.0	35.9 (36.8)
LSD (P=0.05)	0.56	62.2	(10.1)

Decreased growth of the citrus seedlings could be attributed to the reduced v.a. mycorrhizal infection caused by the fumigants. V.a. mycorrhizal fungi increase phosphorus uptake by their extensive hyphae which absorb and translocate phosphorus to roots.

The effect of the mycorrhizal fungi on phosphorus uptake is shown in Table 4.

Table 4:

The effect of phosphorus additions to and steam-air treatment of Sandmount sand on the phosphorus concentration in rough lemon seedling tops.

Phosphorus treatment ug P/g soil	Phosphorus concentration Heated soil %	Unheated soil %
0	ndz	nd
1.4	0.082	0.121
7	0.080	0.143
21	0.075	0.210
42	0.110	0.202
S.E.	0.013	0.013

z—Sample too small for chemical analysis

Vesicular-arbuscular mycorrhizals were absent from the plants growing in the steam-air treated soil, but 50-87 per cent of the roots of plants in the unheated soil were infected. Plant growth in this soil was positively correlated with percentage of mycorrhizal infection of the roots (r=0.75, P=0.05). Infection was not affected by phosphorus or lime treatment.

(Continued on page 15)

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The Winston Churchill Memorial Trust is now calling for applications from Australians, of 18 years and over, from all walks of life who wish to be considered for Churchill Fellowships tenable in 1982.

Completed application forms and reports from three referees must reach the Churchill Trust by 28th February, 1981.

People wishing to be considered for a Churchill Fellowship should send their name and address with a request for a copy of the Churchill Trust's Information Brochure and application forms to:

The Winston Churchill Memorial Trust,
P.O. Box 478,
Canberra City, ACT 2600
or, for residents in South Australia and Western Australia the appropriate address below:

G.P.O. Box 498,
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P.O. Box 6209, Hay Street East,
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OBJECTS OF THE CHURCHILL TRUST

The Winston Churchill Memorial Trust was established in Australia in 1965, the year in which Sir Winston Churchill died. The principal object of the Trust is to perpetuate and honour the memory of Sir Winston Churchill by the award of Memorial Fellowships known as "Churchill Fellowships".

FUNCTION OF THE CHURCHILL TRUST

The aim of the Churchill Trust is to give opportunity, by the provision of financial

support, to enable Australians from all walks of life to undertake overseas study, or an investigative project, of a kind that is not fully available in Australia. This opportunity is provided in furtherance of Sir Winston Churchill's maxim that: "with opportunity comes responsibility".

There are no prescribed qualifications, academic or otherwise, for the award of a Churchill Fellowship. Merit is the primary test, whether based on past achievements or demonstrated ability for future achievement in all walks of life. The value of an applicant's work to the community and the extent to which it will be enhanced by the applicant's overseas study project are important criteria taken into account in selecting Churchill Fellows.

To enable it to provide this opportunity the Churchill Trust administers funds which now stand at over \$6.2m. The original capital of \$4.2m was subscribed, or pledged, in 1965 by all sections of the Australian community to enable the Churchill Trust to be established as a perpetual memorial to Sir Winston Churchill.

SCOPE OF CHURCHILL FELLOWSHIPS

Churchill Fellows are awarded a return economy-class overseas air ticket and an Overseas Living Allowance to enable them to undertake their approved overseas study project. In special cases they may also be awarded supplementary allowances includ-

ing Dependants' Allowance. Fifty-one Churchill Fellowships were awarded for 1981 at a total cost of \$450,000.

All Churchill Fellows are presented at an appropriate ceremony with a certificate identifying them as such. This certificate bestows upon the recipient the prestige of being a Churchill Fellow and, while a Fellow is overseas, serves to open many doors that would not otherwise be opened to a private individual.

SPECIAL DEPRECIATION ALLOWANCE FOR CERTAIN PRIMARY PRODUCTION PLANT

In a joint statement the Treasurer and the Minister for Primary Industry have given further details of the proposal announced in the Prime Minister's Policy Speech of 30th September, 1980, to introduce a special depreciation allowance of 20 per cent a year on a prime cost basis over 5 years for new machinery used wholly and exclusively in agricultural, pastoral and forestry operations and for new vessels used in the fishing industry.

The Ministers said that the special 20 per cent prime cost rate of depreciation will apply to new items of plant and machinery such as harvesters, tractors, shearing plant, milking machines, general farm plant and trucks that are used wholly and exclusively in agricultural or pastoral pursuits or in forest operations, and are eligible for depreciation. It will also be available in respect of plant such as fishing vessels, fishing equipment and shore-based plant used wholly and exclusively in fishing operations.

The new concession will not be available in respect of structural improvements or motor vehicles designed primarily for the transport of persons.

To qualify for the concession, the new item of plant must be acquired by the taxpayer under a contract entered into after 30th September, 1980, or, if constructed by the taxpayer, construction must have commenced after that date. The concession will not be available in respect of second-hand plant.

The new rate will be available in respect of the income year in which the plant is first used and in respect of each of the four succeeding years.

Where plant is not used wholly and exclusively in agricultural, pastoral, forest or fishing operations, normal depreciation allowances will be available.

Taxpayers will be given an option to have normal rates of depreciation apply to individual plant items, instead of the proposed 20 per cent rate. Such an election must be made at the time of lodgment of the income tax return in which depreciation is first claimed in respect of the plant. Once made, such an election will be irrevocable.

Legislation giving effect to the special allowance will be introduced during the sittings of the Parliament later this year.

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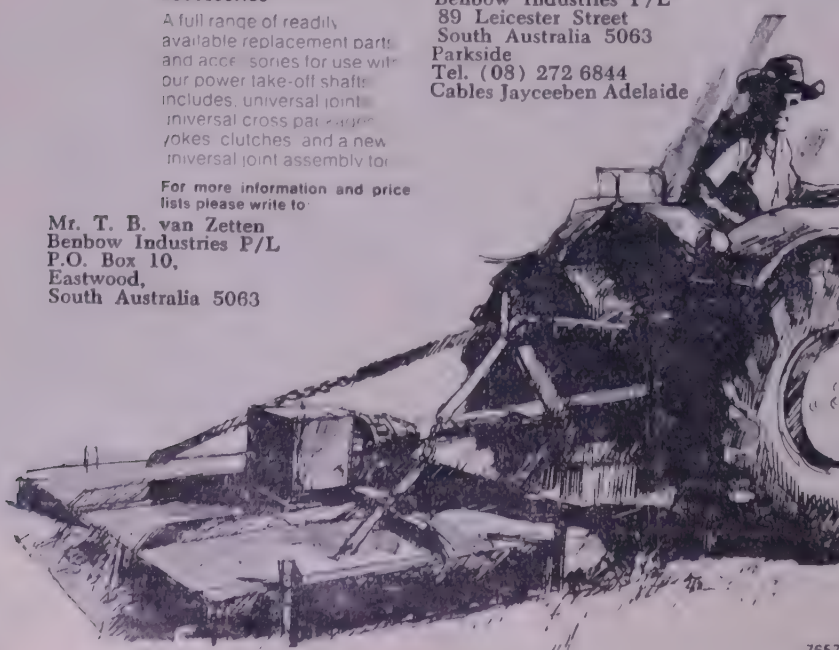
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REPLANTING CITRUS

(Continued from page 12)

Where nursery trees are grown in containers of fumigated or steamed soil v.a. mycorrhizae may be absent. Subsequent field infection will occur in untreated soil but will be restricted if prior fumigation has occurred.

Effects of deep ploughing, fumigation and cover cropping

In South Africa, when old citrus soil is to be replanted to citrus it is recommended that the land should be either fumigated or deep ploughed or a combination of both. The effects of deep ploughing and fumigation persisted for at least 16 years. In heavy South African soils, soil aeration by deep ploughing will improve tree performance regardless of nematode populations. American workers have found that citrus trees are able to tolerate larger populations of nematodes in a well-aerated soil. On the other hand it is rather unlikely that the initial improvement in soil structure and aeration could persist for such a long time. An alternative explanation for the persistent improvement in tree growth following deep ploughing is that residual citrus roots are exposed to air causing rapid decay and reduction in nematode and Phytophthora populations and oxidation of organic phytotoxins liberated by plants to harmless substances.

The establishment of cover crops in citrus groves may provide a number of benefits: replenishing the supply of organic matter in soils and the cation exchange capacity, improve the moisture holding capacity, in addition to reducing

the replant problem. Many legumes are capable of fixing between 100 and 200 kg N/ha/year so legume cover crops could regain their importance in citrus groves as nitrogen fertilisers increase in price. Coarse organic matter on the soil surface reduces the impact of the falling rain-drops and reduces the loss due to collar rot and brown rot of fruit caused by splash dispersal of the fungus *Phytophthora citrophthora*.

Experiments in Progress

(a) Citrus replant trial, Somersby.

Following the removal of 25 year old Marsh grapefruit trees on *Poncirus trifoliata* and rough lemon rootstock at Somersby Horticultural Research Station, a trial was designed to look at soil physical, chemical and microbial changes following various combinations of cover cropping, deep ploughing and fumigation and the subsequent effect on growth of Valencia trees on *Poncirus trifoliata* and Troyer citrange rootstocks.

The present cover crop is oats plus lupins and this will be followed by a summer crop of *Dolichos lablab* plus maize and a second crop of oats and lupins prior to planting trees in spring 1981. Fumigation was with Ditrax(R).

The trial has not been in progress long enough to give any meaningful results.

Pot trials are also in progress at BCRI Rydalmere examining the growth of 'tri' and troyer citrange in Curlwaa soil in virgin and replant sites.

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SEPTEMBER SUMMARY

AUSTRALIAN FRESH FRUIT EXPORTS BY STATES (Tonnes)

	QLD.	N.S.W.*	VIC.*	S.A.	W.A.	TOTAL
Grapefruit	57.4	—	0.8	9.5	—	67.7
Lemons	2.1	2.1	110.9	0.5	39.8	155.4
Limes	0.2	—	—	—	—	0.2
Mandarins	19.6	0.1	31.8	62.1	—	113.6
Oranges	1533.8	25.8	350.6	3182.3	1.8	5094.3
Tangelos	—	0.3	—	0.2	—	0.5
	1613.1	28.3	494.1	3254.6	41.6	5431.7

* Vic./NSW Border Districts.

AUSTRALIAN FRESH FRUIT EXPORTS BY DESTINATIONS (Tonnes)

	G-fruit	Lemons	Limes	M-rins	Oranges	Tangelos	Total
PNG & Solomon Islands	2.0	2.6	—	9.5	48.0	—	62.1
Pacific Islands	9.6	0.8	—	7.4	75.0	0.1	92.9
New Zealand	—	—	—	—	1264.6	—	1264.6
Singapore	—	37.5	—	28.9	677.4	—	743.8
Malaysia	—	1.1	—	—	746.2	—	747.3
Hong Kong	—	—	—	1.5	—	—	1.5
Philippines	—	1.4	—	—	1.3	—	2.7
Bahrain	0.2	—	—	0.2	—	—	0.4
U.A.E.	0.5	0.1	—	0.5	—	0.4	1.5
Kuwait	—	—	—	12.5	—	—	12.5
Indonesia	0.1	1.4	0.2	40.5	69.9	—	112.1
Saudi Arabia	—	—	—	12.6	23.5	—	36.1
Mauritius	—	—	—	—	26.0	—	26.0
Holland	—	—	—	—	1483.2	—	1483.2
Belgium	14.1	—	—	—	309.3	—	323.4
Norway	—	13.7	—	—	72.3	—	86.0
Germany	41.2	—	—	—	21.1	—	62.3
France	—	96.8	—	—	96.5	—	193.3
Sweden	—	—	—	—	133.9	—	133.9
United Kingdom	—	—	—	—	46.1	—	46.1
	67.7	155.4	0.2	113.6	5094.3	0.5	5431.7

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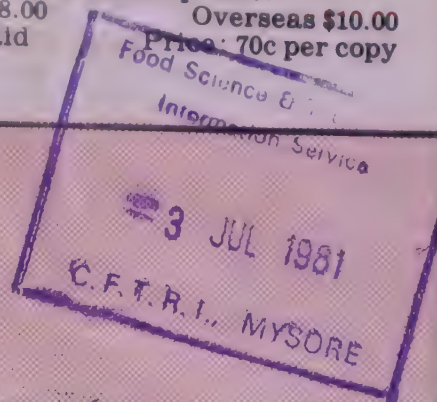
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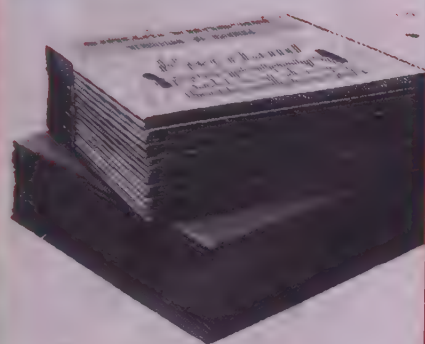
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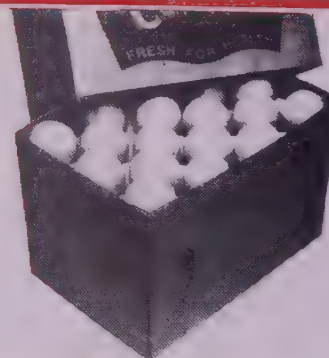
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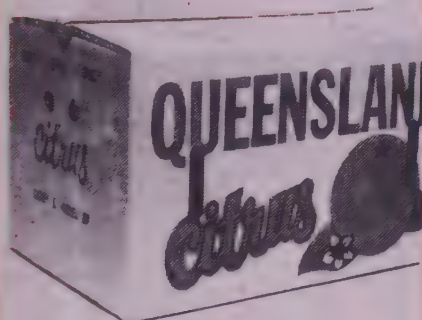
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EDITOR'S NOTE

The future of the River Murray is in danger unless prompt action is taken to ensure there is effective control over the quality of its water.

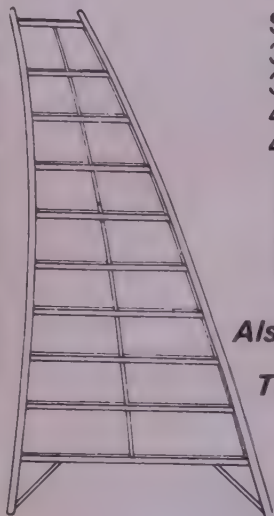
The production of a major part of Australia's horticulture and the supply of adequate suitable water to Adelaide and other towns and cities in South Australia is in jeopardy unless the States of NSW, Victoria and South Australia, in

(Continued on page 2)

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Letters to the Editor

Costs of Packaging

Sir, — With ever increasing costs in our industry it is vital that every effort should be made to save costs wherever possible. Possibly the largest cost in the packing of the product is the carton. I saw a container in California and at the Citrus Conference held at Surfers Paradise early in 1960 I introduced a sample case and from that a committee was formed that eventually adopted the Californian carton for citrus packing. As far as known no other fruit industry now uses this telescopic case. Would it not be advisable to use a one piece case? It may be advisable to make it of slightly stronger cardboard. Through this, savings in material, make-up and handling would be made, also freight and handling and make-up on the packing floor. The saving could be as much as a third or even more.

We are too much inclined to follow what is done in the United States, not always to our benefit. An example is the washing and waxing of the fruit. This was done in California owing to the orange being blackened through the use of frost pots, which are not generally used in Australia. Before that period the industry exported overseas and interstate without any waste or very little. The bloom of the

orange was put on by brushes which gave the fruit a good appearance. By careful handling at all stages, waste and damage was avoided. It is possibly now too late to change back but we certainly could change the carton for the benefit of all.

Except for export and interstate markets the net bag could be used. In South Africa all local citrus sales are in net bags. Provided careful stacking is done very little damage occurs.

I would appreciate it if you would publish this letter in the Citrus News and if your committee approves have the idea considered at the next conference. —DUDLEY J. WALTERS

"Banyandah" Kerang, Vic.

Editor's Note

(Continued from front page)

conjunction with the Commonwealth act now.

Everybody knows what needs to be done — the granting to a single authority such as the River Murray Commission, the additional complete control over the quality of the water in the River, as well as its present control over quantity.

As we celebrate another Australia Day — for the sake of Australia's future — let's bury the hatchet and give the Commission that control immediately.

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Industry Doings

NATIONAL AGRICULTURAL OUTLOOK CONFERENCE

The Chairman of the Australian Citrus Processors Association and President of the Australian Citrus Industry Council, Mr. Bill Korallis will present the Industry Paper on the Outlook for Citrus at the 1981 National Agricultural Outlook Conference being held in Canberra from 27 to 29 January.

The paper will cover the wider aspects and developments affecting the citrus industry and will include production, pricing, marketing, tariffs and the industry's future.

The paper to be presented by the Bureau of Agricultural Economics will be given by Mr. Dennis Waters and the Chairman of the Citrus Session will be Mr. A. Nicol, of the ABC.

The main citrus discussion leader will be Mr. Greg Giles of Justfrute Ltd.

★ ★ ★ ★

MURRAY CITRUS GROWERS – NEW OFFICE ARRANGEMENTS

The Murray Citrus Growers Co-operative Association has moved to new office premises at Berri which will provide facilities for almost full-time attention to citrus industry affairs.

The new address is 4A William Street, Berri and the postal address is P.O. Box 52, Berri 5343.

The office will be manned between the hours of 10 a.m. and 12.30 p.m. and 1.30 p.m. and 5 p.m. each week-day and the telephone number is (085) 822836.

The office arrangements were previously handled in the office of Tilley, Murphy, Hughes and Co.

Mr. Rollo Rofe will continue as MCGCA General Secretary.

MARCH FISCC MEETING FOR LEMONS AND GRAPEFRUIT

The Fruit Industry Sugar Concession Committee will meet in Sydney on Friday 20 March to determine minimum prices for factory purchases of Lemons and Grapefruit of the 1981/82 season.

The decision to set these prices earlier than usual follows on a request by the Australian Citrus Processors Association. ACGF raised no objections to the proposal.

It is likely that ACGF will hold discussions with the processors during February to consider the prospects for these two citrus varieties in the coming season.

★ ★ ★ ★

C.O.D. DEPUTY GENERAL MANAGER

Mr. Neville Smith has been appointed Deputy General Manager of COD.

Neville is well known throughout the Queensland and Australian fruit and vegetable industries, his career having spanned a period of 38 years working in all aspects of the COD operations.

He has represented Queensland growers on various national grower bodies including the Australian Citrus Growers Federation and the Australian Banana Growers Council. He is currently a member of the domestic marketing committee of the Australian Apple and Pear Corporation.

Taking Neville's place as Assistant General Manager is Harry Debney, former Technical Services Co-ordinator.

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Demonstration Orchard at Cudgel

By

J. M. Slack
District Horticulturist, Young

and

J. H. Duncan
Principal Horticulturist (Extension)

Settlers who tried to establish citrus orchards in the late '50s and '60s on coarse sandhill soils in the Murrumbidgee River settlements with overhead sprinklers ran into severe financial trouble.

Disappointed by poor tree growth and production, many turned to lucerne and vegetable growing.

To find remedies for the problems these growers had encountered, a citrus demonstration orchard was set up in the Cudgel sandhills by the Department of Agriculture.

Emphasis was on the importance of good management, particularly in achieving early production. Also, the value of trickle irrigation and high density plantings was shown. This combination raised yields of valencias on trifoliate orange rootstock in the first 8 years of development. Citrange and rough lemon rootstocks gave satisfactory yields for orange varieties under sprinkler irrigation.

The Cudgel demonstration simulated orchard operation by an owner/operator with some casual assistance. Plantings were made as for a commercial orchard and not for research purposes.

Commercial orange and grapefruit varieties on different rootstocks

were included. Two irrigation systems were used to find out the best method for use in the deep sands. Valencia trees on trifoliate orange rootstock were irrigated by low-throw sprinklers on drag-hoses compared with a commercial trickle system operating on the replacement of daily water losses.

Soil Management

Citrus growth in commercial orchards was restricted by weed competition, sand blasting, and high temperatures of the soil near the trees. Weed control in the demonstration was based on the use of pre-emergence herbicides applied in late spring taking care to avoid spraying the foliage and trunks of young trees.

Light cultivations and the occasional use of desiccant sprays were necessary to control problem perennial weeds. Sprinkler irrigated areas were sprayed with pre-emergent herbicide in the strips un-

der the close-planted trees. The inter-row space was allowed to grow grass and weeds which were mown regularly. Winter growing medic was established after 3 years to increase organic matter and reduce wind erosion.

When the seeds matured in spring the medic was sprayed with a desiccant herbicide (diuron and petroleum oil) to provide a soil mulch and prevent summer weed growth. Apart from reducing wind and water erosion of the sand, the mulch lowered surface soil temperatures and reduced the heat reflected on to the young trees.

Historical Background

Citrus growing in the Murrumbidgee Irrigation Areas is largely carried out on soils that could be irrigated by gravity flow furrow or flood systems. Rising water tables and a succession of wet winters caused serious losses of trees from salinity and the fungus rootrot disease *Phytophthora citrophthora*.

(Continued on page 5)



Aerial view of demonstration plantings, scale 1:4500. 1—High density Valencias under trickle irrigation; 2—Valencias and 3—navels, both normal double plantings irrigated by drag-hose; 4—mixed plantings.

Demonstration Orchard at Cudgel

(Continued from page 4)

Following a record wet season in 1958 when many orchards were affected, land was made available for resettlement on the sandhills at Kooba and Cudgel. The new orchards were developed on very coarse sands irrigated by overhead sprinklers, but while peach and apple trees grew well, citrus growth was very poor.

Orchards established on similar soils at Coleambally in the early 1960's were, likewise, not successful for early citrus production, although vegetable crops, particularly potatoes, grew well in the deep sands.

A survey of the orchards on the sandhills was made in 1967 by an inter-Departmental Committee — of officers from CSIRO, the New South Wales Department of Agriculture and the Water Resources Commission — which reported on the situation. The main problems then appeared to be:

- Difficulty in maintaining the moisture requirements of citrus in the coarse sand, particularly for trees on trifoliate orange rootstock;
- Nutritional disorders; and
- Excessive competition from weeds and inter-row lucerne crops.

The Committee's report led to a request to the Department of Agriculture from the Irrigation Research and Extension Committee in the MIA to investigate the problems of development of citrus on sandhills before further land was settled at Coleambally. In September 1969, the Department acquired permissive occupancy of Farm 1567 on the Cudgel sandhills and, assisted by a Commonwealth Extension Services Grant, cleared the land and planted a citrus orchard.

Planting of trees started in the spring of 1970 and continued until about 9 ha of citrus was established by 1973, complete with an irrigation system, caretaker's residence, machinery and storage shed and necessary operating plant.

The demonstration orchard was to have been maintained by the Department of Agriculture until the plantings were fully established, but funding from a Commonwealth Extension Services Grant was terminated in 1978 and the property sold by public tender.

Observations will be continued by arrangement with the new owner to confirm the trends which appeared during the establishment period. The information gained will be useful for future development of citrus on similar sandhill areas in the Riverina.

Wind protection on the elevated sandhills was provided by planting summer-growing windbreaks of Sudax (sorghum x sudan grass) alongside the tree rows. Sudax gave

(Continued on page 6)



ABOVE: Owen Mackay, Horticulturist and Colin Johnson, Field Assistant inspect the root system of a tree irrigated by the trickle system. The close-up photo (lower) shows how the root system is concentrated near hose outlets.



Demonstration Orchard at Cudgel

(Continued from page 5)

good protection through the summer and, when disced in the spring, re-established in the second and third year. Interference with sprinklers and an increase of skeleton weed. (*Chondrilla juncea*) in the rows, made it necessary to abandon the windbreaks and depend on ground cover to prevent soil erosion and sand blasting of trees. Biological control of skeleton weed by insect parasite and rust disease during the demonstration period, reduced the weed control problem. However, couch grass and paspalum patches required special chemical spot spraying in the sprinkler irrigated areas.

RIGHT: John Forsyth, Principal Horticulturist, inspects 9-year-old, trickle-irrigated Valencia trees on trifoliate orange rootstock.

LOWER: 9-year-old Washington navels irrigated by drag-hose sprinklers. Rootstock was Troyer citrange (left) and trifoliate orange (right).



Nutrition

Sandhills of the Riverina flood plains originated by wind erosion from river beds and the coarse sands contain little organic matter. District orchards had shown symptoms of nutritional disorder, so the demonstration aimed at applying the required nutrients regularly. Nitrogen was given to trees irrigated by the trickle system in the form of urea through the system at monthly intervals. Potassium sulphate was applied on three occasions each year between September and April with the irrigation water. Phosphorus was applied annually to the soil around the trickle outlets in the form of superphosphate. Trees irrigated by sprinklers in the drag-hose system received nitrogen, potassium and phosphorus in split applications.

Zinc and manganese sulphate foliage sprays were applied to all plantings in the late spring each year to maintain leaf levels. Corrective nutrition sprays were applied when copper and molybdenum levels were found to be low by leaf analyses. The poor growth of some trees in the sprinkler irrigated areas compared with others adjacent to them, led to an investigation of the soils for mycorrhizal fungi.

Soil samples from both well and poorly grown trees were used in an experiment with citrus seedlings at the Biological and Chemical Research Institute at Rydalmere. There was a lack of phosphorus in the soils in which trees were not growing well and a failure of soil mycorrhizal fungi to supply phosphorus. In later replantings, 100 grams of superphosphate was mixed into the soil prior to replanting. This



problem was not encountered in trees irrigated by the trickle system which received more phosphorus and had regular irrigation.

Pest and Disease Problems

The major pest problem was brown olive scale (*Saissetia oleae*) which caused severe growth restriction in some trees, and unsightly sooty mould (*Capnodia*) on the fruit. The scale appeared on isolated trees and control was attempted by spot spraying them with petroleum oils to avoid interference with parasites. Young trees were also protected against ant attendance of scale by spraying the trunks and surrounding soil. The brown olive scale population flared up in 1977 and it

was necessary to use several organophosphate-in-oil sprays to achieve control.

Red scale (*Aonidiella aurantii*) was not a problem during establishment and minor pests including citrus butterfly, caterpillar, crusader bug and black citrus aphids were not important after the first year from planting. Disease problems, apart from sooty mould, were not significant. Poor drainage caused over-wet areas in which tree health declined because of anaerobic conditions but there was no evidence of *Phytophthora* or other root rots in the orchard.

(Continued on page 7)

Demonstration Orchard at Cudgel

(Continued from page 6)

Drainage

Most of the commercial orchards had developed drainage problems where deep sands met an impervious subsoil on the slopes. The original plantings of valencias, navels and grapefruit were made with bare rooted trees and they were watered by tanker until the trees were established. Replacement plantings were made in sites where trees had grown poorly or died.

Grapefruit trees which were making very poor growth were replaced with Eureka and Lisbon lemons on rough lemon, Benton citrange and Smooth Seville rootstocks.

Severe frosts caused the loss of some trees on the lower fringe of plantings. Valencia on sweet orange rootstock were more prone to damage than those on trifoliate orange, rough lemon or citrange. Generally bare rooted trees, particularly those on sweet orange rootstock, did not grow as well as later plantings of orange and lemon trees produced in plastic containers. Trees developed with trickle irrigation grew uniformly well in the early years with a compact root system around the dripper outlets.

Trees grown in the sprinkler

irrigated areas lacked uniformity in the early years and their roots were found to extend deep into the soil in search of moisture. Rough lemon and citrange rootstocks made the best growth with sweet orange and trifoliate orange being slower.

Production

Citrus trees on trifoliate orange rootstock in Cudgel orchards had yielded about 25 kg of fruit in the 8th year from planting and trees on rough lemon about 55 kg.

Cumulative yields of Valencias on trifoliate orange rootstock illustrate production in the early years of establishment for the guidance of citrus growers developing orchards on Sandmount and similar sands of low fertility. There were nutrition problems and correction of soil pH with lime was necessary, but the close frequency of irrigation was the

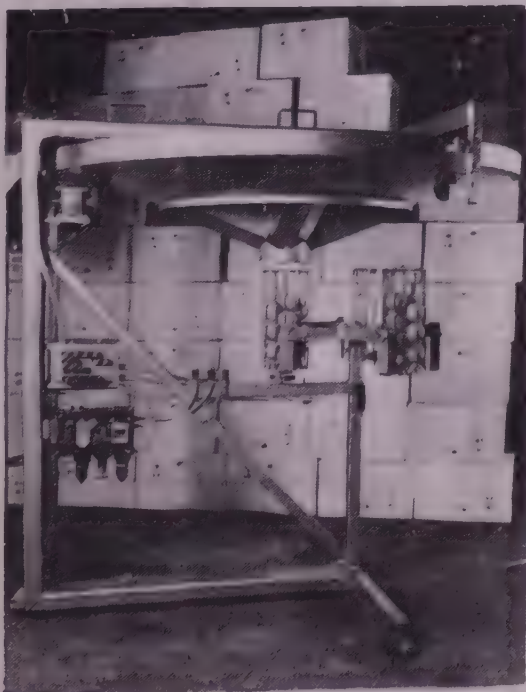
Table 1. Trickle v Drag Hose

Cumulative yield of Valencias/trifoliate orange trees 1975-78 (trees planted in spring 1971)

Irrigation system	Trees/ha	tonnes/ha	kg/ha	Tree size July 1977	
				Butt circ. (cm)	CSA m ²
Trickle	960	61.2	63.75	19.5	8.0
Drag Hose	445	22.0	49.44	15.7	5.7

(Continued on page 10)

DDM FRUIT HANDLING EQUIPMENT INTRODUCES RADICAL NEW ORANGE PACKER (Patented)



The DDM Orange Bagger has been developed for use in the citrus packing industry, to dramatically reduce the labour cost involved in packing the commonly preferred extruded net bag. This machine increases productivity while offering the advantage of attractive presentation of the packaged fruit.



The answer to attractive orange packing

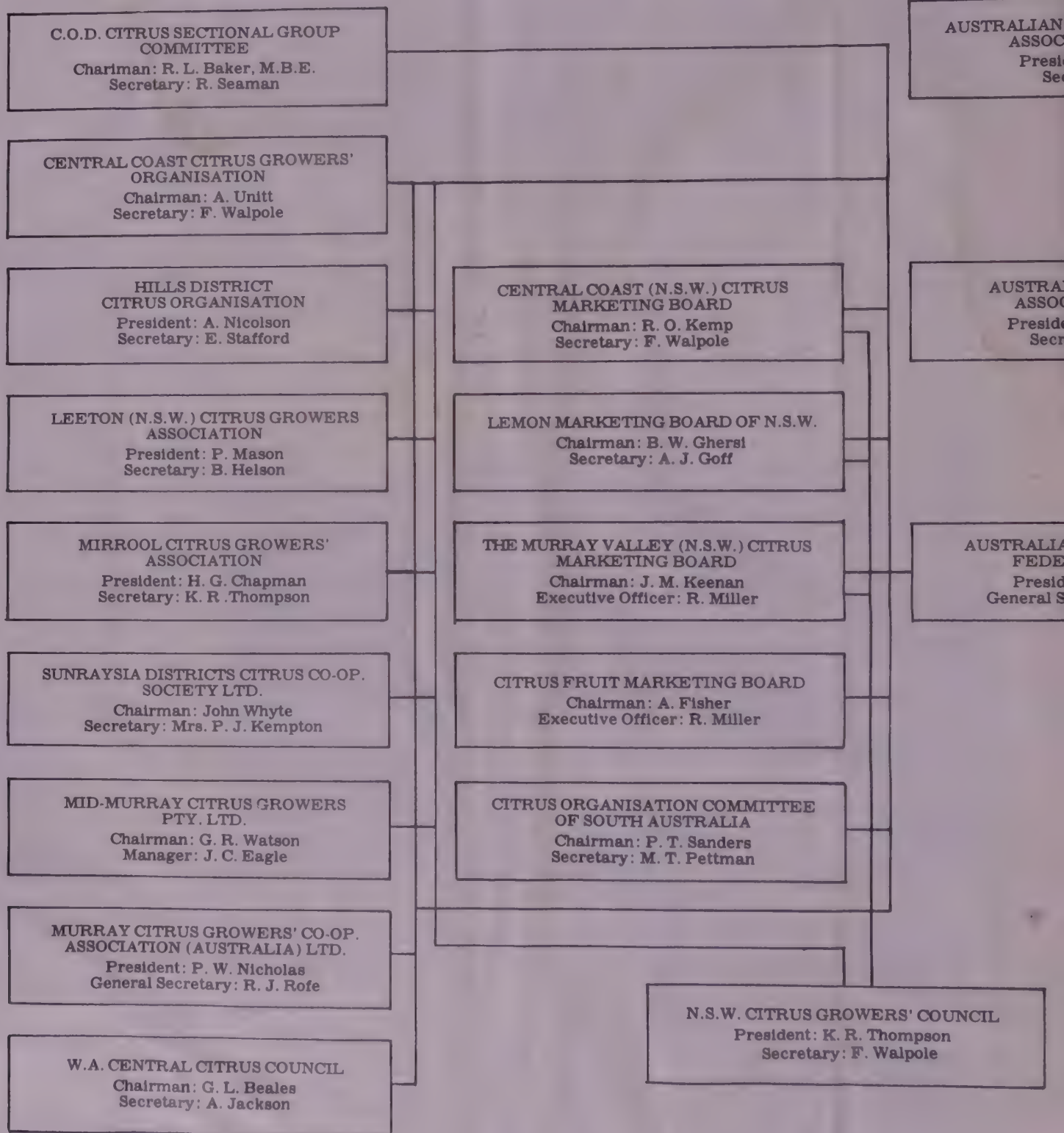
FEATURES:

- Utilises extruded net bags, allowing fruit to breathe
- Packs fruit in the accepted 2' x 2' configuration
- Offers attractive presentation of packaged fruit
- Dramatically reduces labour costs
- No damage to fruit
- Packs up to 2400kg per hour
- Simple Electro-Pneumatic control equipment ensures trouble-free operation.

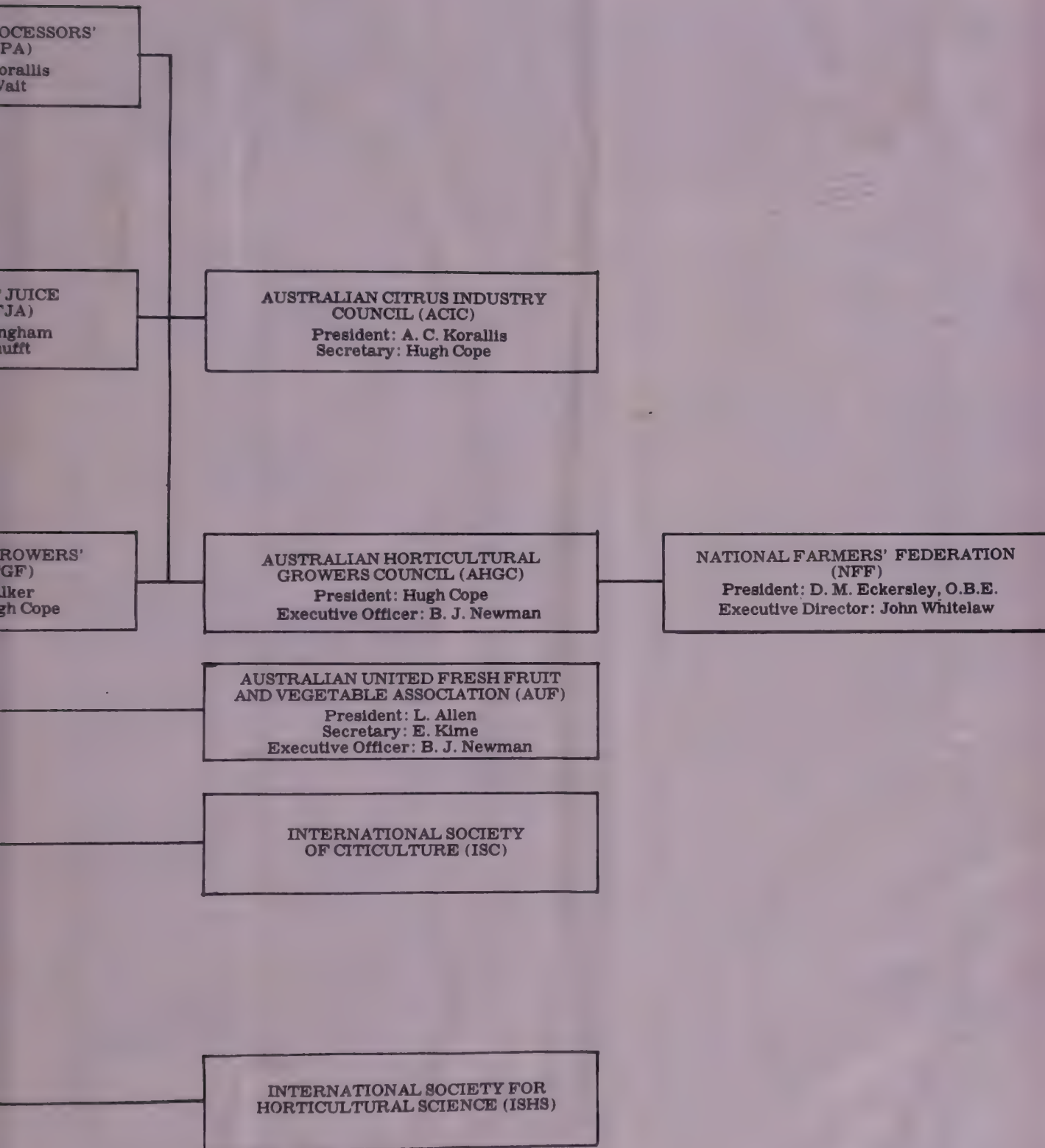
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13 White Ave., Bacchus Marsh. Phone: Bus. (053) 67 3850; A.H. (053) 67 3796

AUSTRALIAN CITRUS INDUSTRY



FAMILY TREE



Demonstration Orchard at Cudgel

(Continued from page 7)

In other plantings in the orchard, valencia and navel oranges were compared on different rootstocks. The growth and early yields from standard "double" planted trees (445 per ha) under the drag-hose system confirmed commercial growers experience that rough lemon rootstocks gave better yields than trifoliolate orange.

Cumulative yield figures are shown in Table 2.

Table 2. Cumulative yields of Valencia on various rootstocks 1975-78 crops planted at 445 trees/ha.

Rootstock	tonnes/ha	kg/tree	Tree size July 1977	
			Butt circ. (cm)	CSA (m ²)
Troyer citrange (planted 1971).....	29	65.1	22.7	11.2
Trifoliolate orange (planted 1971)	22	49.4	15.7	5.7
Rough lemon (planted 1972)	37	83.1	24.1	11.0
Sweet orange (planted 1972)	17	38.2	20.8	8.1

Fruit quality was rated best from trees on trifoliolate orange with trees on Troyer citrange being next. Fruit quality from the trees on rough lemon and sweet orange was satisfactory.

Washington navel plantings made in 1971 on various rootstocks gave much higher yields than Valencias on similar rootstocks under drag-hose irrigation. Cumulative yields are shown in Table 3.

Table 3. Details of commercial demonstration plantings of Valencia orange trees.

Location	Rootstock	Spacing row/tree	Area planted
Leeton	P. trifoliata	4.3x2.5	0.2
Leeton	P. trifoliata	4.6x2.5	0.4
Griffith	P. trifoliata	3.4x2.5	0.3
Griffith	P. trifoliata	4.3x2.1	1.1
Barham	Troyer citrange	5.0x2.3	1.0

Fruit quality was excellent from trees on both citrange and trifoliolate orange and satisfactory for fruit grown on the other rootstocks. The location of the trees on rough lemon and sweet orange in a lower area than other rootstocks may have

reduced yields. However, the results confirm the superior performance of citrange rootstocks in the establishment period over trifoliolate orange.

The project clearly demonstrated the importance of close frequencies of irrigation and the nutritional needs for establishment of citrus in coarse sandhills. Trickle irrigation proved more efficient and less labour demanding than the drag-hose sprinkler system. While high density plantings of citrus (960/ha) on trifoliolate rootstock was satisfac-

tory for Valencias, trees on Troyer citrange at standard close spacing (445Lha) produced comparable yields. The yields for Washington navels were much greater than for Valencias for all rootstocks.

Acknowledgment

The authors wish to acknowledge the work of Mr. J. W. Turpin, formerly Principal Horticulturist (Citrus), who initiated the project; Messrs. J. B. Forsyth and O. Mackay who supervised development and Messrs. K. Seton and C. Johnstone, Field Assistants, who were responsible for orchard management, Mr. R. Weir, Special Research Chemist, and Mrs. P. Barkley, Senior Research Scientist, Biological and Chemical Research Institute, Rydalmere, provided considerable technical advice on nutritional and disease problems.

—Agricultural Gazette of NSW., December, 1980.

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INDUSTRY DOINGS

(Continued from page 3)

NEW VICTORIAN MINISTER OF AGRICULTURE

Following on a Cabinet reshuffle in Victoria the Hon. Tom Austin has been appointed to the portfolio of Agriculture.

Mr. Austin takes over the position from Mr. Ian Smith who has held the portfolio for a number of years.

★ ★ ★ ★

MILDURA CO-OP. ANNOUNCES \$2.6m. PROFIT

Mildura Co-operative Fruit Co. Ltd., has finished the financial year with a record profit of \$2,676,000 compared with \$1,307,669 last year and has provided a record distribution to shareholders.

Included in the distribution will be citrus growers of packed, pool and 30-day factory fruit, who will get 20c per carton, 10c in cash and 10c in shares.

Support by citrus growers for the

Co-op's citrus processing factory saw a record throughput of 39,902 tonnes in the 1979-80 season.

A second citrus juice extraction line to boost the capacity from 22 to 32 tonnes per hour, will be added for more flexibility in handling up to five citrus varieties.

★ ★ ★ ★

BIG O OPENS \$4m. JUICE FACTORY IN SYDNEY

The largest fruit juice packaging factory in the Southern Hemisphere was opened recently in the Sydney suburb of Blacktown.

The \$4m. Big O Fruit Juice operation covers 80,000 square feet and is situated on seven acres of land.

Big O is one of a number of fruit juice lines marketed by Sun Pak Fruit Juices Pty. Ltd.

The new premises have enabled the company to integrate under one roof two plants previously located in

the widely separated Sydney suburbs of Windsor and Girraween, with extensive chilling facilities and high speed filling lines to triple capacity.

Part of the complex has been leased to a plastics blowmoulding company which will supply plastic bottles on site.

The Blacktown operation will employ 100 people as well as providing substantial new business for local support industries.

★ ★ ★ ★

ORANGES TO ASIA

Riv-Sam Pty. Ltd. of Berri, South Australia recently shipped a total of 41,000 boxes of oranges, making 78 container loads, to various ports in south East Asia. The orders followed several visits to the area by Riv-Sam's Manager, Mr. John Henwood, and a campaign to promote the Riverland brand name in the countries concerned.

Leaf Analysis for Citrus

By Ben Robinson
Senior Research Officer, Plant Nutrition (S.A. Dept. of Agriculture)

Citrus leaves can be analysed to check the suitability of a fertilizer programme, show how the programme should be changed and follow the effectiveness of any change.

The chemicals in a leaf can help explain what the root system of the tree is finding in the soil. Leaves properly sampled from top-performing orchards, no matter where those orchards are, should contain similar concentrations of the main nutrients.

Sampling

Leaves must be sampled properly or the analytical results will be at best misleading or at worst useless.

Which leaf? 3 to 5 month old leaves from the non-fruiting twigs of the spring growth flush — some experience is needed to accurately select these leaves. The leaves are usually taken in February. The second or third leaf is taken from each twig.

How many leaves? 60 to 100.

Where on the tree? four leaves, shoulder high, one from each of the north, south, east and west quadrants of each tree.

Which tree? to represent any uniform patch of one variety, sample leaves from at least 25 trees along a zig-zag or X passage through the block.

What to do with samples? place the leaves in a brown paper bag — not plastic — and get them to the laboratory for oven drying as quickly as possible. Keep as cool as possible while in the field.

This sort of sample will be

representative of the block. It will be reproducible and give an accurate estimate of the block's nutrient status. It will be large enough for the laboratory to analyse and, most importantly, allow proper comparisons to be made with the standard values (shown in the table on this page). Such a sample will give the grower confidence in the interpretation of comparisons.

Growers can take the samples themselves or, if the service is offered, have an experienced field officer (for example, form the fertilizer supplier) do it — this is easier and better for reproductibility. Either way, the samples are analysed by the Consolidated Fertilizers Ltd. Laboratory in Brisbane through Adelaide and Wallaroo Fertilizers.

An officer of the SA Department of Agriculture participates in the interpretation of these commercial samples each year. The standards used then and which we suggest you use when looking at your leaf analyses are given on this page.

Interpretation

Interpretation of the analyses should not just rely on comparison with the standard values. Tree vigour and age, crop load, and other aspects of management (for example, irrigation and soil management) influence yield and fruit quality as

well as the leaf nutrient status. Rootstocks will have an effect (see below).

Previous fertilizer history will provide a baseline from which changes can be made either up or down depending on leaf analysis values and other on-block factors.

Nitrogen (N): take account of the cover crop or volunteer medic growth when assessing the amount of nitrogen fertilizer needed. As much nitrogen as 30 kg/ha can come from a good stand of medic. If nitrogen is in the *deficient* range, yield will be reduced. If the level is too high, fruit quality will suffer (thick skins, poor colour). Values in the *low to optimum* ranges seem satisfactory for the Riverland.

Phosphorus (P): if values are in the *optimum* or *high* ranges, Consider stopping applications of fertilizers that contain phosphorus until the leaf analysis value falls into the *low* range. Phosphorus deficiency is associated with coarse, open-centred fruit.

Potassium (K): large variation in values can occur from year to year. Potassium is usually in the *normal* range in the Riverland but plantings on light sands could develop a potassium deficiency. Values are usually in the *low* range on rough lemon rootstock and higher on the other stocks.

Calcium (Ca): use this leaf analysis value as a check that a proper sample was taken. If values are in the *high* or *excess* ranges the leaves were too old. Leaves that are too young will have *low* or *deficient* calcium concentrations. **If a proper sample was not taken, ignore the whole leaf analysis.**

Magnesium (Mg): deficiency symptoms on the leaves are probably as good as leaf analysis as an indicator of the need for magnesium fertilizer.

Zinc (Zn) and Manganese (Mn): deficiency symptoms on leaves indicate the need for foliar sprays. If foliar sprays have been used contamination is inevitable — ignore the values.

Sodium (Na), Chloride (Cl) and Boron (B): *high* or *excess* values point to a need for attention to irrigation practice or drainage. Where sodium and chloride are in the *excess* range,

(Continued on page 12)

Leaf analysis values for citrus

Nutrient	Deficient (less than)	Normal range			Excess (more than)
		Low	Optimum	High	
Nitrogen (N) (%) (1,2)	2.2	2.2 to 2.3	2.4 to 2.6	2.7 to 2.8	2.8
Phosphorus (P) (%)	0.09	0.09 to 0.11	0.12 to 0.16	0.17 to 0.29	0.30
Potassium (K) (%) (3)	0.4	0.4 to 0.69	0.7 to 1.09	1.1 to 2.0	2.3
Calcium (Ca) (%) (4)	1.6	1.6 to 2.9	3.0 to 5.5	5.6 to 6.9	7.0
Magnesium (Mg) (%)	0.16	0.16 to 0.25	0.26 to 0.6	0.7 to 1.1	1.2
Manganese (Mn) (ppm) (5)	16	16 to 24	25 to 200	300 to 500	?
Zinc (Zn) (ppm)	16	16 to 24	25 to 100	110 to 200	?
Copper (Cu) (ppm)	3.6	3.6 to 4.9	5 to 16	17 to 22	?
Sodium (Na) (%) (6)			less than 0.16	0.17 to 0.24	0.25
Chloride (Cl) (%) (6)			less than 0.3	0.4 to 0.6	0.7
Boron (B) (ppm) (6)	21	21 to 30	31 to 100	101 to 260	260

- (1) Consider vigour and fruit quality — the *low* nitrogen values may be best suited to Riverland conditions.
- (2) For grapefruit 2.0 to 2.2% nitrogen is optimum; for lemons 2.3 to 2.6, but this can't always be attained with vigorous clones.
- (3) Trees on rough lemon rootstock will usually be in the *low* part of the normal range for potassium; other rootstocks should have *optimum* values.
- (4) Calcium in the *high* range suggests that the wrong leaves (too old) have been sampled.
- (5) If contamination with foliar sprays has occurred, ignore these values.
- (6) *High* to *excess* sodium, chloride or boron suggests that attention should be given to irrigation or drainage.

Irrigation and Salinity Control In Israel and the USA

By Dr. A. M. Grieve
Senior Research Horticulturist,
Horticultural Research Station, Dareton, NSW

In April and May of this year I was fortunate, with the assistance of the Sunraysia District Citrus Co-op. Society and the Citrus Management Company, to visit Israel and America to examine the latest research findings on irrigation techniques for salinity control as well as the ability of plants to tolerate salt.

There are quite large areas in Israel and the USA where water of poorer quality than we normally experience in the Murray, is satisfactorily used for irrigation.

For example, in Israel the National Water Carrier averages 1100-1200 EC, and in the USA the lower Colorado averages 1200-1500 EC. The chloride content of the Israeli water supply is about 200 mg/L (ppm) and they regard the desirable limit for citrus as about 250 mg/L.

At this level the productivity of Israeli citrus is high and salinity is not regarded as a factor limiting yield.

The national average production is 40 tonnes/hectare with the best growers obtaining 2-3 times that figure. In some parts of Israel (e.g. the Gaza Strip) water containing 700-800 mg/L chloride is used to irrigate citrus although with noticeable effects on growth.

In comparison with these salinity levels our own water quality seems quite manageable. For example the average salinity at Dareton (perhaps the worst in Sunraysia) for the past two seasons was 500 EC (100 mg/L chloride). In the two preceding seasons (1976-77 and 1977-78) average quality was about 600 EC. In the countries I visited this is regarded as good quality water, provided that an appropriate system of irrigation is employed.

How are Israeli and American irrigators able to successfully use worse quality water than we believe we can? Some of the answers are simple and well known. Surface irrigation methods (under-tree sprinklers, trickle or flood) which don't wet the foliage are universal for citrus in both countries unless high quality water is available. Low-level sprinklers (full ground cover or partial cover) also give more uniform distribution, better leaching and waste less water through evaporation.

Where possible, trickle irrigation is used with even greater water savings. Water is available whenever it is required in Israel through a complex National Water System. Information on how often to water and how much to apply for all crops is available in each of the

regions for every month of the year and soil type.

In the USA much attention is given to **Irrigation Scheduling Services**, both private and government run. This all adds up to a high degree of control and sophistication in **Irrigation Management**. The approach has been based on careful experiments and practical experience supported by a very professional advisory service. Extensive use is made of tensiometers and other soil water monitoring devices. The irrigator must be able to **Control the Timing and Amount of Water Application**. By this means the consumptive requirement of the crop can be met and soil moisture maintained at a high level. If this is done, only a small additional amount of water (either as rainfall or irrigation) will be necessary to maintain acceptable levels of soil

salinity.

In Israel the substantial winter rains (250-400 mm) normally remove any accumulated salt. Otherwise leaching is accomplished by a special irrigation before the irrigation season begins.

In the USA much work has been directed towards the use of low leaching fractions. There are many reasons for this interest. In many of the soils of the Colorado watershed, irrigation water percolating beyond the rootzone may dissolve salts present in the soil and add substantially to salt entering the river. By reducing the quantity of water passing through the bottom of the rootzone this salt load may be reduced, lessening the burden on users further down the river. Reducing drainage waters also means less costly disposal works.

(Continued on page 13)

Leaf Analysis for Citrus

(Continued from page 11)

the whole leaf analysis will be impossible to interpret with confidence.

How often

How often should citrus leaves be analysed?

Trouble shooting: one analysis may be enough if corrective action is obvious and can be carried out straight away.

Reassurance: a full analysis for two consecutive years will provide enough information to reassure a grower that his present fertilizer programme is satisfactory.

Monitoring: a full analysis for two consecutive years and then regularly every three to five years or after a change in programme will allow a grower to monitor his fertilizer programme. This should be combined with a visual check on leaf symptoms every year to pick zinc, manganese and magnesium deficiencies. Tree vigour gives a good indication of nitrogen status.

Growers who have been following a 'balanced' fertilizer programme using a complete NPK fertilizer for some years, or who have ripped in or

banded heavy dressings of super-phosphate, may gain confidence from just one leaf analysis to reduce their fertilizer programmes to broadcasting nitrogen alone together with foliar applications of zinc and manganese. A regular analysis, say every three to five years, will show when residual phosphorus and potassium in the soil have declined to the stage where they need to be applied.

Reading the table

If trees have leaf analysis values in the *deficient* or *excess* parts of the range, a change in fertilizer, fertilizer practice or management that brings the concentration into the *normal* range can be expected to improve tree health and yield.

If the leaf analysis values are in the *high* or *low* part of the normal range, management changes that bring them into the *optimum* range cannot necessarily be expected to bring about obvious changes in tree health or yield. Factors such as fruit quality must be used to help decide in which part of the *normal* range to operate.

Fresh Citrus Exports

NOVEMBER SUMMARY

AUSTRALIAN FRESH FRUIT EXPORTS BY STATES (TONNES)

	QLD.	N.S.W.	VIC.	S.A.	W.A.	TOTAL
Grapefruit	2.2	1.0	1.4	6.4	—	11.0
Lemons	3.4	3.6	1.6	11.1	66.5	86.3
Limes	0.1	—	—	—	—	0.1
Mandarins	—	0.9	1.0	0.1	—	2.0
Oranges	28.9	17.1	325.1	4,139.2	1.8	4,512.1
	34.7	22.6	329.1	4,156.8	68.3	4,611.5

AUSTRALIAN FRESH FRUIT EXPORTS BY DESTINATIONS (Tonnes)

	Grapefruit	Lemons	Limes	Mandarins	Oranges	Total
PNG & Solomon Is.	3.4	3.7	—	0.2	71.9	79.2
Pacific Islands	6.6	13.9	—	0.1	133.2	153.8
Antarctica	0.1	0.1	—	—	0.1	0.3
New Zealand	—	—	—	—	1,715.7	1,715.7
Singapore	—	63.6	—	1.0	1,430.5	1,495.1
Malaysia	—	2.0	—	—	701.3	703.3
Indonesia	0.1	1.8	0.1	—	286.2	288.2
Hong Kong	0.1	0.1	—	—	161.6	161.8
Philippines	—	0.8	—	—	1.2	2.0
Sri Lanka	—	—	—	—	10.4	10.4
U.A.E.	0.4	0.3	—	—	—	0.7
Bahrain	0.3	—	—	0.7	—	1.0
	11.0	86.3	0.1	2.0	4,512.1	4,611.5

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Irrigation and Salinity Control

(Continued from page 12)

Naturally it is important to ensure this can be done without risk to the productivity of crops. At Tacna in Arizona the USDA Salinity Laboratory has found that by using high frequency irrigation a 10% leaching fraction was more than adequate for citrus irrigated with Colorado water.

The most important area of the rootzone appears to lie in the top 60 cm. If this can be kept free of salt by proper irrigation management, salinity effects are minimised.

Another important approach to the problem of salinity in both countries is to look for biological solutions. More tolerant rootstocks of horticultural crops like grapevines, avocados and citrus have been selected. Selection and breeding of annual crops such as barley and tomatoes has shown that it is possible to obtain acceptable yields even with salt concentrations approaching sea-water.

This suggests that in the long-term the development of more salt-tolerant plants will be possible. In the short-term the technological approach of Improved Irrigation Management and Methods will help to overcome salinity problems in irrigation areas of the Murray-Darling systems.

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Fruit Growing Industry (Federal) Award Wage Rate Schedule

From the beginning of the first pay period to commence on or after 14 July, 1980.

In accordance with the decision of the Australian Conciliation and Arbitration Commission in the National Wage Case, the rates of pay in this award are adjusted as follows:

MALES AND FEMALES

No. Classification

	Old Rate Per Week	Increase Per Week	New Rate Per Week
1. Fork Lift Truck Driver	156.60	5.80	162.40
2. Motor Lorry Driver	156.60	5.80	162.40
3. Tractor Driver	153.10	5.90	159.00
4. Employee engaged in sorting, grading, and/or packing fruit	144.50	5.30	149.80
5. GENERAL HAND - Class 1 An employee who performs work of any of the following classifications: Sweat lumper, maintenance worker in charge of machinery, concrete worker and/or rack builder, trelliser, box maker by hand, boiler attendant, furnace attendant	153.10	5.90	159.00
6. GENERAL HAND - Class 2 (i) An employee who performs general duties as directed other than those elsewhere specified herein	149.80	5.50	155.30
(ii) An employee who performs general duties as directed other than those elsewhere specified herein and who has been continuously employed by an employer for at least two years	153.10	5.90	159.00
7. LEADING HAND (i) In charge of 2 to 6 employees	7.70	0.30	8.00
(ii) In charge of 7 to 10 employees	8.30	0.30	8.60
(iii) In charge of 11 to 20 employees	12.80	0.50	13.30
(iv) In charge of over 20 employees	16.70	0.60	17.30

A leading hand shall mean an employee appointed to be in charge of and to supervise the work of other employees.

JUNIOR EMPLOYEES

(a) The minimum wage payable to junior employees shall be the under-mentioned percentages of the weekly adult wage rate for the classification under which they are employed.

1. In Orchards and Vineyards:

Percentage of the Weekly Adult Wage Rate

At 15 years of age	50
At 16 years of age	60
At 17 years of age	70
At 18 years of age	80
At 19 years of age	90
At 20 years of age	100

2. In Packing Houses, Cool Stores and Dehydration Plants:

At 15 years of age	50
At 16 years of age	70
At 17 years of age	80
At 18 years of age	100

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Quality of Orange Juice

Currently, the supply of oranges suitable for processing is inadequate during August-September, the period between the production peaks of navels and valencias. To overcome this deficiency the NSW Department of Agriculture examined seven selected mid-season cultivars (Hamlin, White Siletta, Mediterranean Sweet, St. Michael, Joppa, Homasassa and Pineapple) grown on Poncirus trifoliata stock, the normal rootstock recommended for producing processing fruit.

The juices obtained were unsatisfactory due to high acidity.

These seven cultivars have now been re-examined using rough lemon rootstocks, which characteristically provide juices of lower acidity. When the juices were examined after processing, not all the cultivars showed significant bitterness, although this is normally a problem with rough lemon rootstocks.

Hamlin, an early maturing common sweet orange, which is popular in Florida, performed extremely well, with good juice yield, high sugar content, high Brix-acid ratio, low acidity, negligible bitterness and good overall acceptability. White Siletta had slightly lower sugar content but was also satisfactory with only slightly less overall accep-

tability than Hamlin; both these cultivars provided good juices of acceptable quality in August.

Mediterranean Sweet did not yield acceptable juice until late September but, although the quality was not as good as that of Hamlin or White Siletta, it could be useful for processing just before Valencia reaches full maturity. St. Michael showed promise at the August pick but is susceptible to premature fruit drop.

The use of 'stop-drop' sprays may be valuable with this cultivar. Joppa, Homosassa and Pineapple were unsatisfactory due to high bitterness and poor flavour in the processed juice.

— "Food Technology in Australia",
September 1980.

Recipe of the Month

MANDARIN MARMALADE

Wash and slice 12 mandarins very finely. Stand overnight in 15 cups (6 pints) of water. Next day boil until rind is tender and water is well reduced. Stand for 12 hours and then add 1 cup of sugar to every cup of fruit, plus the juice of two lemons. Boil quickly until it jellies when tested.

Irrigation Storages Report

DECEMBER SUMMARY

STORAGES

	Capacity Megalitres	Week ending 24-12-80 Megalitres
Hume Reservoir	3,038,000	1,661,000
Lake Victoria	680,000	521,000
Menindee Lakes	1,794,000	782,000
Dartmouth Reservoir	4,000,000	2,149,000
Burrinjuck	1,026,000	359,100
Blowering	1,628,000	667,480

WATER FLOWING TO SOUTH AUSTRALIA (River Murray)

Week ending 24-12-80	56,000
Monthly entitlement for December	217,000
Total for December to 31-12-80	174,000
Total for November	172,000

WATER QUALITY (River Murray)

(Average quality for week — total dissolved solids in parts per million)

	19-12-79	24-12-80
Swan Hill	182	131
Euston	162	124
Red Cliffs	176	195
Merbein	220	250
Lock 9	168	372
Lake Victoria	264	318
Berri	252	372
Waikerie	402	516
Mannum	222	522
Murray Bridge	222	486

— (Extracts from River Murray Commission Reports and
NSW Monthly Weather Review).

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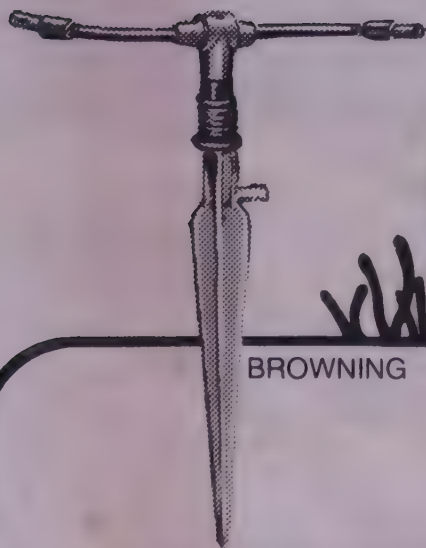
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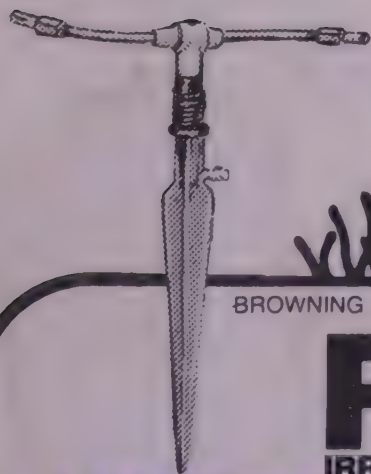
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Copies of the four volumes of "The Citrus Industry" are again being made available through the office of the Australian Citrus Growers' Federation.

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Industry Doings

INDUSTRY MEETINGS IN MARCH

A series of citrus industry meetings will be held in Sydney on March 3, 4, and 5.

The schedule of meetings will be as follows:

March 3: Australian Citrus Processors Association.

March 4: ACGF Lemon Sub-Committee.

March 4: ACGF Working Committee.

March 4: ACGF Executive Committee.

March 4: Joint ACGF/ACPA Discussions.

March 4: Australian Fruit Juice Association.

March 5: Australian Citrus Industry Council.

Subjects listed for discussion at the meetings include policy in respect to FISCC minimum factory prices for lemons and grapefruit in the 1981/82 season, preliminary crop forecasts and season prospects for the 1981/82 season, the tariff arrangements on orange juice, import and export statistics etc.

FISCC is due to meet on March 20 in Sydney to set the minimum prices for lemons and grapefruit.

★ ★ ★ ★

1980 CITRUS EXPORTS IN LINE WITH FORECASTS

A total of 34,502 tonnes of fresh citrus were exported from Australia during 1980.

Although the figure is some 10,000 tonnes below the record achieved in 1979, the industry forecast for 1980 was for a reduction of 35,000 tonnes, due to the increased availability of fruit from California, and this target has been reached.

The total exports represent about 7 per cent of the Australian citrus production and the figure of 34,502

tonnes is still well above the level of previous years.

In 1980 oranges accounted for 24,708 tonnes, mandarins 7,707 tonnes, lemons 1,273 tonnes (compared with 4,919 in the previous year) and grapefruit 812 tonnes.

South Australia provided 20,057 tonnes of the total (58%) and Queensland 10,640 tonnes (31%).

The most important export market in 1980 was again New Zealand taking 24% of the total exports. Next came Singapore 19%, Malaysia 10%, Holland 8%, and Saudi Arabia 7%.

★ ★ ★ ★

GRIFFITH PRODUCERS CO-OP. TO EXPAND

The chairman of Directors of Griffith Producers Co-operative Ltd., Mr. Philip Crook, has announced plans for further expansion at the Company's citrus processing plant.

The company intends to increase the extraction capacity as well as the evaporative capacity in order to be able to process a greater tonnage daily, while the fruit is at its optimum brix-acid ratio.

The company has also ordered from Brown International the latest oil extraction equipment and this installation is planned to be operational for this year's lemon crop.

★ ★ ★ ★

LEMON MARKETING BOARD ELECTIONS

A poll of producers of lemons in New South Wales will be taken by postal ballot closing with the Return-

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Tariff Protection Vital for Citrus Industry

Provided the present tariff system is maintained for imports of orange juice there is a bright outlook for the citrus industry in Australia in the future.

However, any action to upset this system would have serious effect on the future of the industry.

This was the view expressed by Mr. Bill Korallis, Chairman of the Australian Citrus Processors Association and President of the Australian Citrus Industry Council in the Industry Outlook Paper presented to the 1981 National Agricultural Outlook Conference in Canberra on 29 January this year.

The full text of Mr. Korallis's Paper is as follows:

The purpose of this paper is to outline the present situation regarding the citrus industry as a whole, with particular emphasis on the processing side of the industry, together with marketing of citrus fruit juices in general, and latest trends and innovations in the marketing sphere, in the competitive world of fruit juice marketing.

The B.A.E. together with the Australian Bureau of Statistics will more than amply cover the whole aspects of production of all citrus varieties Australia wide. This paper will also endeavour to explain the problems now facing the citrus industry and possible solutions to those problems.

Brave will be the man who will be in a position to predict the outlook of this industry in the next two years, since the I.A.C. hearing is due to take place later this year, and any decision that the Government would make after the recommendation of the I.A.C. will have a very great effect on the outlook for the citrus industry. This aspect will be discussed later on in this paper.

Supply and Demand Situation

NAVEL ORANGES

Although all Navel oranges available to the factories have been processed, it is still evident that the percentage of fruit sold on the domestic fresh fruit market seems to be the dominant factor in Navel disposal. For instance, the 1978/79 and 1979/80 figures compare as follows:

	1978	1979/80
Domestic Fresh		
Fruit	77,500 t. (57.2%)	69,000 t. (51.3%)
Export	8,000 t. (5.9%)	11,400 t. (8.5%)
Factory Processed	50,000 t. (36.9%)	54,000 t. (40.2%)

Processors are indeed happy to process Navel oranges, particularly those of late season when the bitter-

ness level drops to an acceptable one, and it is customary for Navel juice to be used in soft drink and cordial manufacture and also blended with Valencia — particularly in orange drink and orange juice.

Returns to the grower for this variety have been higher than the minimum price set by the F.I.S.C.C. due mainly to the Statutory Boards increasing the F.I.S.C.C. prices. The terms of payment are also faster than those recommended by the F.I.S.C.C.

Although at first glance it appears that supply exceeds demand for Navel oranges, it is not unknown for processors to carry stock at the end of the processing season, which results in sales at or below cost so that processors can maintain liquidity in order to remain in business.

VALENCIA ORANGES AND OTHER VARIETIES

In the case of Valencia oranges, we see a different trend, in that the factory intake considerably exceeds the domestic fresh fruit market.

	1978/79	1979/80
Domestic Fresh		
Fruit	72,400 t. (31.5%)	74,700 t. (28.2%)
Export	12,800 t. (5.5%)	20,700 t. (7.8%)
Factory Processed	145,000 t. (63%)	189,200 t. (64.0%)

There is no doubt that Valencia Oranges are the back-bone of the citrus industry, not only because of the quality of the juice obtained, but also because the crop of Valencias is approximately double that of Navels. The quality of Australian Valencia oranges, from the point of view of flavour and colour, can be considered as the best in the world. However, yields expressed in kilograms solids per tonne are far below those of the major processing countries, although in the M.I.A. area the yields are considerably higher than both Sunraysia and the Riverland.

Orange based products would represent approximately 80% of each processor's or convertor's business, and it is the main seller which seems to subsidise other varieties.

The prices paid for Valencia oranges were again higher than the recommended F.I.S.C.C. prices, and terms and conditions were also faster than the minimum terms and conditions set down by the F.I.S.C.C. As in the case of Navel oranges, the Statutory Boards have increased the minimum F.I.S.C.C. price for this variety.

TOTAL ORANGES

The total production of all varieties of oranges for the 1978/79 season was 385,000 tonnes and for 1979/80 399,000 tonnes, made up as follows:

	1978/79	1979/80
Domestic Fresh		
Fruit	149,900 t. (41.0%)	143,700 t. (36.0%)
Export	20,600 t. (5.6%)	32,100 t. (8.0%)
Factory Processed	195,000 t. (53.4%)	223,200 t. (56.0%)

It is obvious from the above figures, that again the importance of factory intake of oranges is the dominant factory of the industry.

MANDARINS

Mandarins obviously have a very limited usage for processing, and only a small percentage are utilised as such, the main outlet being the domestic fresh market, which can be seen from the following figures:

	1978/79	1979/80
Domestic Fresh		
Fruit	25,900 t. (80.4%)	19,400 t. (69.0%)
Export	5,300 t. (16.5%)	7,700 t. (27.4%)
Factory Processed	1,000 t. (3.1%)	1,000 t. (3.6%)

LEMONS

This variety of citrus is becoming a major problem for growers and processors alike. The supply exceeds the demand and, unless a solution is found to utilise lemon juice, the day will come when, by necessity, lemons will be left on the trees. This is because lemon juice can only be used for soft drinks, cordials and in lemon fruit juice drink, the sales of which are in fact very, very limited, to the extent where some companies do not even manufacture a lemon fruit juice drink.

However, in the past two years, the growers have been able to sell their lemons to processors by offering valencia oranges if they would also take the lemons; the usual ratio would be 4:1. This particular season there is no doubt that the large majority of processors will have a carry-over of lemon juice which has been selling on the open market for less than production cost. However, the production of by-products, such as lemon oil which, this year, has been in demand due to a shortage in the U.S.A., has saved the day for both growers and processor. This situation can only be considered temporary and unless another usage is found for lemon juice, this particular section of the industry will suffer in the long run.

(Continued on page 5)

February, 1981

Tariff Protection Vital for Citrus Industry

(Continued from page 4)

Unless the price of lemon oil is increased to higher levels than this year, it is not possible to export any lemon concentrate at all. Although it was suggested that a two-price structure apply to lemon juice for export and local consumption, this will be hard to police and perhaps unacceptable to growers.

It would also be possible to increase the minimum fruit juice content to 50% instead of the present 25% for Sales Tax exemption in cordials, but this would only absorb a small percentage of the surplus.

In order to compete on the international market place, the price of the fruit should drop to \$55 per tonne to the grower which, of course, would not be economical for the grower; however, whilst oranges for lemons "sweetheart deals" continue, we may not see lemon trees pulled out of the ground. If, at any time, this practice ceases, it will be very hard to see lemons produced in Australia being absorbed by the processing industry which, in the 1978/79 period, was 51% and in the 1979/80 season 60%, of the total crop.

Therefore, it would be necessary for a more concerted effort on behalf of growers and their representatives to endeavour to market as many lemons as possible to the fresh fruit market and export market, but this will not happen while the factory price for fruit which this year, was increased by the F.I.S.C.C. by \$5 per tonne from \$99 to \$104, is higher than the return from the fresh fruit market place.

Again the N.S.W. Lemon Board have taken it upon themselves to increase the price from \$104 per tonne to \$110 per tonne, for N.S.W. only, which reduced the factory intake of lemons by some companies.

GRAPEFRUIT

The situation with grapefruit is similar to lemons, but not as serious. This variety of citrus is highly dependant on factory intake, as is evidenced by the following figures:

	1978/79	1979/80
Domestic Fresh		
Fruit	13,100 t. (49.6%)	7,600 t. (30.4%)
Export	500 t. (1.9%)	900 t. (3.6%)
Factory Processed	12,800 t. (48.5%)	16,500 t. (66.0%)

The same situation exists here in exchanging grapefruit for valencia oranges and at this stage all grapefruit is processed. However, processors are holding stocks and in most instances they have to sell grapefruit juice at below cost to maintain liquidity.

Grapefruit juice did not have a shot in the arm when the grapefruit diet originally came on the scene in 1968/69. However, since then the February, 1981

demand has declined, but in the last two years with the advent of the long life products in 2 litre P.V.C. bottles, grapefruit juice sales have, in fact, increased considerably. Notwithstanding this fact, the supply still exceeds the demand.

We do have a problem here in Australia in that our grapefruit juice is particularly bitter and high in acidity as compared with the overseas variety, which is much milder in both acid and bitterness levels. The industry believes that if acidity and bitterness can be overcome, grapefruit juice sales will increase. The C.S.I.R.O., funded by the industry, is presently carrying out research work in this direction to reduce the bitterness and acidity levels by adsorptive processes. An interim report has been presented, and work is continuing on this subject.

TOTAL ALL CITRUS

During 1978/79 season 472,300 tonnes of citrus fruits were produced, and in 1979/80 491,300 tonnes were produced, and accounted for in the following manner:

	1978/79	1979/80
Domestic Fresh		
Fruit	211,700 t. (44.8%)	181,700 t. (37.0%)
Export	27,200 t. (5.8%)	45,600 t. (9.3%)
Factory Processed	233,400 t. (49.4%)	264,000 t. (53.7%)

These figures clearly indicate the dependancy of the citrus industry on the processing sector, as approximately 54% of all citrus in Australia goes to the processing factories. As a result it is considered prudent that in this paper more emphasis should be placed on the processing section of the industry, so that in conjunction with the Bureau of Statistics and the B.A.E. figures, a total picture of the citrus industry in Australia can be clearly understood.

PRICING

(a) Country factories

In the case of navel oranges, in the 1979 season, the price was set by the F.I.S.C.C. at \$76 per tonne, but it was increased by the Statutory Boards to \$80 per tonne, and in 1980/81 the F.I.S.C.C. set the price at \$83 per tonne and this was subsequently increased by the Boards to \$89, except in South Australia. However, the price paid for factory fruit Australia-wide was approximately \$105 per tonne, plus freight.

In the case of valencia oranges, the 1979/80 F.I.S.C.C. price was fixed at \$90 per tonne, and eventually increased to \$93 by the Statutory Boards, and in the 1980/81 season the price was increased from \$98 per tonne to \$105. Again there has been no official increase in South Australia, but the price generally

paid for the fruit in the main growing areas was between \$110 and \$115 per tonne, plus freight to factories.

The lemon price for 1979/80 was \$99 per tonne, which showed no increase from the previous year, but in 1980/81 the price was set at \$104, and eventually increased by the N.S.W. Lemon Board to \$110.

The price of grapefruit has remained static since 1975 at \$78 per tonne.

(b) 81-200 km (inclusive) from nearest capital city.

The major area falling into this category is the Central Coast of N.S.W. where prices were increased by the N.S.W. Central Coast Marketing Board, as follows:

	1979/80	1980/81
Valencias	\$94-\$102/tonne (in two stages)	\$102-\$107/tonne (in two stages)
Navels	\$80-\$83/tonne	\$87-\$90/tonne

(c) Capital city

\$4 should be added to all the above prices for Metropolitan processors.

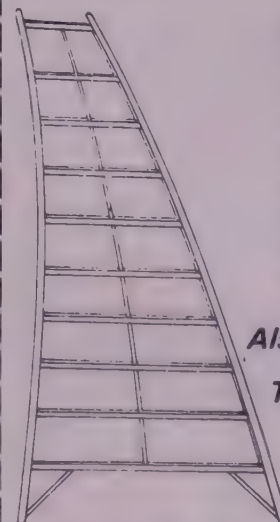
The processing industry is greatly concerned by the practice of the Statutory Boards of increasing prices of fruit already set by the F.I.S.C.C. Although it is realised that the F.I.S.C.C. price determination is

(Continued on page 6)

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Tariff Protection Vital for Citrus Industry

(Continued from page 5)

the minimum to be paid for fruit for the purpose of claiming Domestic and Export Sugar Rebate, we see dangers in undermining the power of the F.I.S.C.C. if this practice by the Boards continues. In addition, there is no Board in the M.I.A. which can place this area in a more favourable situation than other citrus growing areas in Australia.

The industry feels it is imperative that price fixation by the F.I.S.C.C. is essential, and would not like to see any possibility of a change in the matter of price fixation which, in the long term, is likely to upset and undermine the functions of the F.I.S.C.C.

It is believed that, like any other commodity, the supply and demand situation should dictate the prices to be paid for fruit and, although in the last two years these prices were even above those set by the Statutory Boards, it is still considered that this practice should cease, so that market forces can take their natural course.

The Australian Citrus Processors' Association is very mindful of the price structure within Australia, and there is grave concern that sales of Australian orange juice will be pegged by the price of imported concentrate. Last year the going price in the Eastern States for Valencia concentrate was approximately 32c per litre and although processors had to

absorb increased costs in the beginning of the season, they were looking for a price of approximately 34c per litre, but resistance from buyers was evident because imported concentrate was selling at approximately 30c per litre, with up to 90 days terms for payment ex cold store. Stocks of orange concentrate are available and held in cold stores in the main capital cities.

The ideal situation, of course, would be the indexation of the tariff which would no doubt suit both growers and processors alike, because it is obvious that since the imported price of orange juice is set, as inflation results in increased costs for both processors and growers, the time will come when the differential between imported and local material will meet a much greater resistance from local purchasers of orange concentrate. This will also have a definite effect on other citrus fruits such as lemons and grapefruit, because as far as the processor is concerned, oranges seem to subsidise the other varieties.

SUMMARY

The supply of oranges in Australia is not sufficient to meet the demand; therefore, it is necessary to compensate for the shortfall by importing concentrate from overseas. The main country from which Australia imports concentrate is Brazil, followed by Mexico and the United States of America.

In the 1979/80 season the equivalent of 118,670 tonnes of fresh fruit was imported into Australia. This compares with 24,925 tonnes in the 1978/79 period. However, these figures have to be treated with care, since for the first time in 1980 the imports were based on kilograms solids rather than single strength litres, and there is some doubt as to the accuracy of the conversion to fresh fruit tonnes.

In the case of lemons, as pointed out above, the supply exceeds the demand and the same can be said for grapefruit, although the situation here is not as serious as in the case of lemons.

Processing Section of the Industry

As you are no doubt aware, the main growing areas of citrus fruits in Australia are the Riverland of South Australia, Sunraysia of Victoria, the M.I.A., the Hills District and Gosford, north of Sydney, and some small quantity is grown south of Perth and also in Queensland.

In all there are 10 major and 12 smaller plants in Australia. It is generally agreed that there are too many processing plant which, in fact, fall into three categories, namely:

1. The processor/convertor — these are the major manufacturing companies which process citrus into concentrates and also reconstitute and market their own products under their own brand.
2. The processor — which can be defined as a plant which manufactures concentrate for re-sale, and
3. the pure convertor — who buys concentrate from another source and reconstitutes it into various juice products.

It is pleasing to note that after considerable effort, The Australian Citrus Processors' Association was formed two years ago, and eligibility for membership is a person or company which purchases citrus fruit in its natural form, extracts the juice and offers the juice for sale in any form to other sectors of the industry, or to the public.

This is a forum for all processors falling into the first two categories set out above to act as one body and represent the processing side of the industry and express their feelings and views to Government Departments, Citrus Organisations, Statutory Authorities and other relevant bodies for the improvement of the citrus industry.

Last year was the first year of the existence of the Australian Citrus Industry Council, a body which

(Continued on page 14)

INDUSTRY DOINGS

(Continued from page 3)

ning Officer, State Electoral Office, Box 832, G.P.O. Sydney NSW 2001 at noon on Tuesday, April 7, 1981 to elect five representatives of producers to the Lemon Marketing Board of NSW to hold office for a period of three years commencing on May 31, 1981.

For the purposes of the poll the four electoral districts involved are as follows:

- Northern Coastal and Central Coastal Statistical Agricultural Areas, the City of Gosford and Shire of Wyong (2 representatives).

- Sydney and Southern Coastal Statistical Agricultural Area (1 representative).

- Shires of Leeton, Narrandera and Wade (1 representative).

- That part of NSW not within the other three districts — mainly the Mid and Lower Murray Areas (1 representative).

Claims for enrolment and objections to enrolment must be lodged with the Returning Officer before 5 p.m. on Thursday, February 26, 1981 and nominations from persons

desirous of contesting the election must reach the Returning Officer before NOON on that same day.

★ ★ ★ ★

SPECIAL COURSE ON CITRUS NURSERY PROPAGATION IN USA

Citrus nurserymen, growers and citrus industry leaders interested in up-dating their knowledge and skill in the efficient production of true-to-type, disease free trees have an opportunity to learn new methods and technical procedures in an intensive two-week course to be presented in California and Florida in April this year.

Enrolment in the California course from April 20 to April 25 is \$US400 and enrolment in the Florida course from April 27 to May 1 is \$US600, a total of \$US1,000 for both courses.

Details of the programme and other information can be obtained by contacting the ACGF office in Adelaide.

Australia Cannot Provide Answers To N.Z. Economic Problems

The Minister for Primary Industry, Mr. Peter Nixon has assured the Australian Agricultural Council that there would be no hasty decisions made by the Commonwealth on the question of a closer economic relationship with New Zealand.

Officially opening the Council's meeting in Hobart on February 9, Mr. Nixon said that the Australian Government wanted to ensure that no Australian agricultural industry was unfairly disadvantaged by closer economic ties.

"The Government is committed to full consultations with the States and the industries before any decisions are taken on this issue. In this respect, consultations were held between Government officials and industry representatives at a special meeting of the Australian Horticultural Growers Council in Sydney on January 14," he said.

Mr. Nixon said that he was aware of concern that prospects of a closer economic relationship might have on the Australian potato, pea, bean and mushroom industries, as well as the dairy industry.

Mr. Nixon reiterated his view that New Zealand must appreciate that Australia, with its small market, cannot provide the answer to New Zealand's economic problems.

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CORRECTION

The Fruit Growing Industry (Federal) Award Wage Rate Schedule which appeared on Page 14 of the January issue of "Australian Citrus News" applies from the beginning of the first pay period to commence on or after January 9, 1981.

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Citrus on the M.I.A.

By: K. Richens District Horticulturist, Leeton

This winter over 25,000 tonnes of navel oranges were harvested from orchards in the Murrumbidgee irrigation areas.

This is a record.

It indicates the increases in citrus production of the M.I.A. over recent years.

Although the valencia crop this season is not expected to reach the record tonnage of last season, the total citrus crop on the M.I.A. is expected to be over 100,000 tonnes.

This compares to the 1970 to 1972 productions of around 38,000 tonnes per annum. Citrus production has increased by over 260% in the 10 years.

Valencia production has increased from around 28,000 tonnes in 1970-72 to 68,000 tonnes expected this season.

Navel orange production has increased from crops of around 7,000 tonnes in 1970-72 to 25,000 tonnes this season.

Grapefruit has shown the biggest increase in production; from less than 500 tonnes in 1970 to over 5,000 tonnes in 1980.

Lemon production has increased from around 1,200 tonnes in 1970-72 to around 2,900 tonnes in recent years.

Mandarins and sevilles are the only citrus crops to stay at the 1970 levels of 200 and 30 tonnes per year.

Processing

Juice processing has also increased in importance on the Murrumbidgee Irrigation Areas.

Ten years ago citrus processing was carried out by three juice factories on the M.I.A., and other city-based processors. The total quantities of fruit processed ranged between 8,000 and 20,000 tonnes, depending on the season.

The seven processors on the M.I.A. took over 52,000 tonnes of citrus fruits in 1979/80; 61% of valencia oranges, 91% of grapefruit, 81% of lemons, and 34% of navel oranges were processed.

Overall citrus, processors took 57% of the crop in 1979/80.

The Future

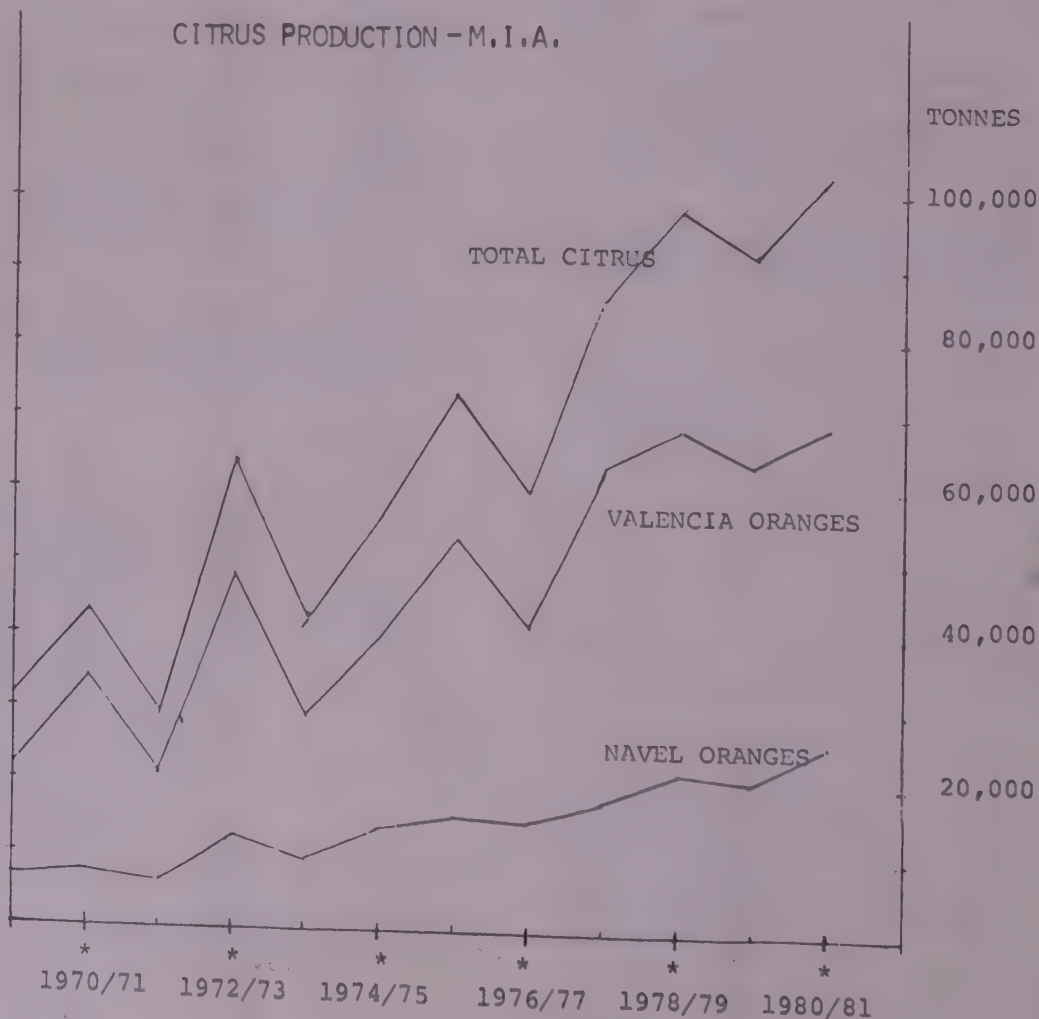
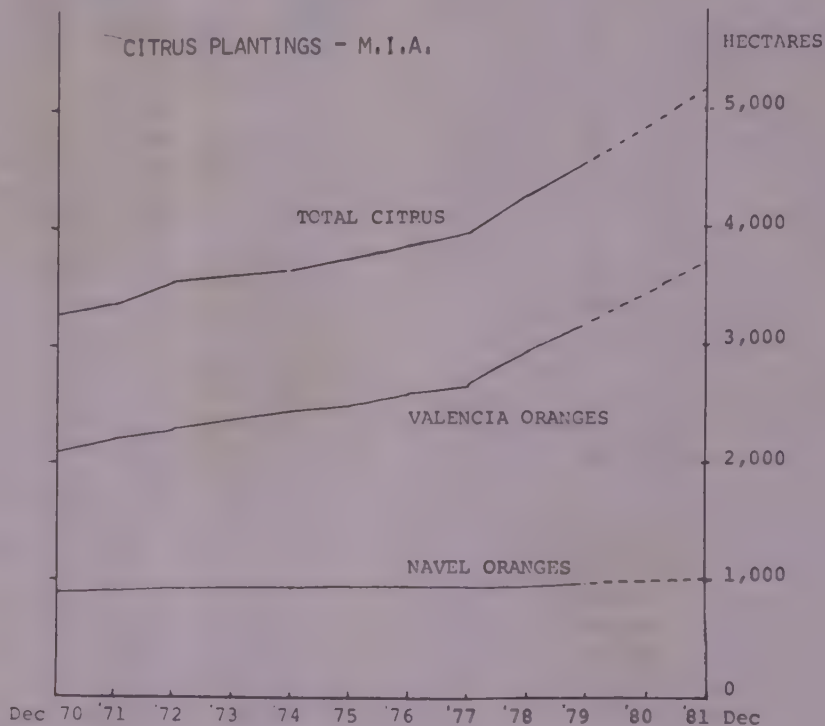
Citrus on the Murrumbidgee Irrigation Areas is expected to become even more important with the recent large scale plantings in Leeton, Griffith and the adjoining Hillston areas.

Planting figures for these areas between 1977 and 1979 show an increase in plantings of citrus of just below 600 hectares. By December 1979, there were 4,538 hectares of citrus planted with a non-bearing area of 970 hectares. Of this, valencia oranges comprised 3,200 hectares with 840 hectares non-bearing age.

Plantings in 1980, and the next

couple of years, are expected to continue at the past two year's rate of planting. This should bring the total

citrus area on the M.I.A. and surrounding areas to over 5,300 hectares.



- I.R.E.C. Farmers Newsletter
December, 1980

The Outlook for Citrus

(Paper prepared by Mr. Gordon Duffus, of the Bureau of Agricultural Economics, Canberra and presented to the 1981 National Agricultural Outlook Conference by Mr. Dennis Waters).

SUMMARY

Prices

Reflecting the sustained high level of domestic demand for citrus fruit and a forecast slight reduction in Australian production, domestic fresh and processing fruit prices in 1980-81 are expected to rise. The price rises may not eventuate, however, if supplies are significantly greater than forecast due to favourable weather conditions before harvest. Average returns from export sales are forecast to be lower than last year's levels as a result of increased supplies of world exports, which are mainly due to a recovery in the U.S. crop.

Production

Bearing tree numbers are forecast to remain at 5.6 million in 1980-81. On the basis of bearing tree numbers and expected yields, total citrus production in 1980-81 is forecast at 480 kt. The decline in production of approximately 2 per cent from last year's level is expected to be entirely due to a fall in valencia orange output, because of a return to more normal yields.

Valencia bearing tree numbers are forecast to rise in the medium term as a result of increased plantings in recent years, reflecting producers' expectations of favourable market opportunities. Consequently, valencia production is forecast to rise in the medium term. The upward trend in yields, associated with improved cultivation practices, is expected to contribute further to the estimated increase in valencia production. On the other hand, navel orange production will stabilise and then decline during the 1980s, unless higher yields more than offset the forecast reduction in bearing tree numbers.

Expected yields and tree numbers would indicate that, in the medium term, the output of oranges and grapefruit should rise, that of lemons should remain unchanged, and mandarin production should fall slightly.

Domestic Utilisation

The increasing level of citrus juice consumption per person partly reflects the introduction of 'convenience' packs. Total demand for citrus juice is expected to remain high, at least in the first half of the 1980s.

With the sustained high demand for juice, the intake of fruit by the processing sector will remain at around the 1979-80 level of 247.3 kt, despite the slight decline in total production. Because domestic output will not satisfy the demand from processors, large quantities of con-

centrates will again be imported. As in 1979-80, processors are expected to maintain the premium of \$20/t to \$25/t on FISCC (Fruit Industry Sugar Concession Committee) minimum prices for fruit.

The supply of fresh citrus to the domestic market in 1980-81 is forecast at 196 kt, which is similar to the level of the previous season. Due to the reduced supply of cool-store apples during the first half of the season, there is expected to be less competition from apples for navel oranges. However, valencia oranges will be subject to increased competition from the forecast 'on year' apple crop later in the year. As a result, the price of navel oranges in 1980-81 is forecast to average \$4.70 per 30 litre pack, which is above the level of the previous season, while valencia prices, forecast to average \$4.50 per 30 litre pack, are slightly lower than those of the previous season.

In spite of the forecast expansion in citrus production in the medium term, the relatively larger intake by processors should result in a decline in the production of citrus production directed to the domestic fresh and/or export markets.

Exports.

Due to the recovery in U.S. exportable supplies, Australian exports of fresh citrus are forecast to decline to 35 kt in 1980-81, almost 25 per cent below the record of the previous season. With increased competition, particularly in Asian markets, prices are expected to decline from the 1979-80 levels.

REVIEW OF KEY FEATURES: 1979-80

Prices

Minimum prices determined by the FISCC rose only marginally for the 1979-80 season. Navel, valencia and seville orange prices were increased by \$2/t, \$4/t and \$3/t, to \$76/t, \$90/t and \$90/t, respectively. Prices for lemons and grapefruit remained unchanged at \$99/t and \$78/t, respectively.

Reflecting the strong demand from the processing sector, actual prices paid for oranges were \$20/t to \$25/t above the FISCC minimum prices; for other citrus fruit, the prices were only slightly above FISCC minimum prices.

Production

Citrus bearing tree numbers in 1979-80 were estimated at 5.6 million, similar to the level of the previous season. As a result of plantings in recent years, in response to expectations of favourable market prospects, valencia bearing tree

numbers increased by approximately 10,000 during 1979-80 to 2.63 million.

Australian citrus production in 1979-80 increased to a record 488 kt, approximately 7.5 per cent higher than in the previous season.

The rise in output was entirely due to the larger harvest of valencia oranges (260 kt), resulting from high yields due to favourable growing conditions. With little change in bearing tree numbers and yields, production of all other citrus fruits remained similar to 1978-79 levels.

Utilisation

Due to the high level of demand by processors and increased availabilities of citrus supplies, 247.3 kt, or approximately 50 per cent of total citrus production, was utilised by the processing sector. The increased demand for citrus juice, which began during the late 1970s, mainly reflected the introduction of the convenient non-refrigerated long-life juice packs and the extensive promotion of these products.

Australian citrus exports during 1979-80 were a record 45 kt, an increase of approximately 70 per cent over the previous season. Such shipments represented a sharp rise above the recent upward trend in exports. As the USA was unable to supply the Asian and Pacific markets adequately, following a decline in production in 1979, Australia met the shortfall with good quality fruit (particularly valencia oranges) and benefited from the considerably higher export prices.

Imports

During 1979-80, processors were unable to obtain sufficient supplies of domestic fruit to satisfy the increased level of demand for orange juice. Consequently, a record 54.8 Mt of single-strength juice was imported. This was more than three times the level of imports in the previous year. This level of imports, representing a fresh fruit equivalent of 122 kt, supplemented the 247.3 kt of domestically produced fruit sent for processing. Almost all of the citrus imports in 1979-80 consisted of orange juice.

The variable tariff for imported orange and mandarin juices, introduced in March 1979, continued to operate in 1980 and provided a degree of protection to domestic producers. As the value for duty, taken in this case as the f.o.b. value of these juices, was between \$1.45/kg and \$1.55/kg of total soluble solids (TSS) content, a variable duty of approximately \$0.85/kg to \$0.95/kg was imposed to raise the price of impor-

(Continued on page 10)

The Outlook for Citrus

(Continued from page 9)

ted juice to the floor price of \$2.40/kg of TSS content.

Producers Incomes

BAE survey estimates indicate that, between 1976-77 and 1979-80, net cash incomes of citrus producers, on average, rose by 86 per cent to nearly \$28,000. During the same period, cash costs increased by 46 per cent.

ANALYSIS OF OUTLOOK

Prices and Returns

Average prices for citrus fruit on the domestic fresh market are expected to increase slightly in 1980-81, owing to the anticipated small decline in production. Similarly, prices received by producers for citrus fruit delivered to processors are expected to remain at least at last year's levels. Because of a recovery in U.S. production and the resulting increase in supplies, Australian exports and export unit returns are expected to decline. Overall, with gross returns to growers expected to be similar to 1979-80 levels and with cash costs higher due to inflation, net cash incomes may be slightly lower in 1980-81.

In 1980-81, continued strong demand from processors for oranges should result in processing prices similar to those in 1979-80, with premiums again being paid. Domestic fresh orange prices are expected to average close to those of last season.

Average returns for fresh lemons are unlikely to change from those in 1979-80. Returns from the processing sector should rise to \$104/t, following the increase of \$5/t in FISCC minimum prices. Prices for fresh lemons rose last season, mainly because increased export sales reduced domestic availabilities. With lemon exports, particularly to Europe and the Middle East, likely to remain high in 1980-81, domestic fresh supplies are likely to be reduced and prices should remain at least at 1979-80 levels.

Fresh market prices for grapefruit in 1980-81 are not expected to change significantly, as production and demand from the various sectors will remain around the levels of the previous season. The FISCC price for grapefruit for processing again remained unchanged at \$78/t for 1980-81.

Fresh mandarin prices are expected to approximate those of 1979-80. However, export returns may decline slightly due to increased mandarin supplies in world markets.

The above price forecasts for the various citrus fruits may not evenuate if significant changes in expected supplies occur. In addition, un-

forseen movements in the costs of farm inputs, transport and storage could influence prices in 1980-81.

Production

On the basis of existing bearing tree numbers and expected yields, total production of citrus fruit in 1980-81 is forecast at 480 kt. This output is approximately 2 per cent below the record of the previous season when favourable growing conditions resulted in higher-than-normal yields of valencia oranges. Production of valencia oranges is forecast at 235 kt, a reduction of about 10 per cent which would follow a return to more normal yields. This

decline is expected to outweigh the 15 kt rise in navel output, which is expected to be 145 kt. As little change is forecast in bearing tree numbers or yields of other citrus fruits, the production levels of lemons, grapefruit and mandarins are expected to remain similar to those in 1979-80, at 40 kt, 25 kt and 28 kt, respectively (see Table 1).

As the forecasts are based on existing tree numbers and expected yields, any significant change in growing conditions prior to harvest could result in the output of various citrus crops, especially valencia, varying from the estimates.

Table 1. CITRUS PRODUCTION

Variety	1976-77 kt	1977-78 kt	1978-79 kt	1979-80 (s) kt	1980-81 (s) kt
Navel.....	122.2	125.5	130.0	130.0	145.0
Valencia.....	193.7	225.8	226.0	260.0	235.0
Total oranges (a)	321.7	356.5	361.0	395.0	385.0
Mandarins.....	30.7	27.6	28.0	28.0	28.0
Lemons.....	36.2	37.2	40.0	40.0	40.0
Grapefruit.....	21.5	22.8	25.0	25.0	25.0
Total citrus	410.1	444.1	454.0	488.0	478.0

(a) Includes small quantities of varieties other than navel and valencia.

(s) Estimated by the BAE.

Sources: ABS: Australian Citrus Growers' Federation; BAE.

Bearing tree numbers of the various citrus fruits in 1980-81 are expected to remain unchanged from the 1979-80 levels. Both bearing and non-bearing navel orange tree numbers have declined in recent years, with the number of bearing trees falling to a low of 1.61 million in 1979-80 (table 1). Unless yields increase to offset the decline in tree numbers, the production of navel oranges will stabilise and then fall during the 1980s. On the other hand, the high demand for valencia oranges by the processing and export sectors has induced plantings in recent years. Such additional non-bearing trees will result in an increase in both valencia bearing tree numbers and valencia production in the medium-to-long term.

Despite current favourable conditions in the industry, substantial increases in the rate of new plantings are not expected in the medium term. The lag between planting and commercial output and the uncertainty surrounding the continuance of existing levels of protection to growers are major factors contributing to this expected outcome.

Yields of all citrus fruits except grapefruit have been increasing slowly over the past decade (see Table III). These increased yields are partly due to the adoption of improved cultivation practices related to the increased use of fertilisers and pesticides, improved drainage and irrigation practices, and the maturing age structure of the tree

population. These trends are expected to result in further increases in yields and, consequently, production in the medium term.

Over the medium term, indications are for increases in orange and grapefruit production, a levelling out of lemon production and a slight decline in mandarin production.

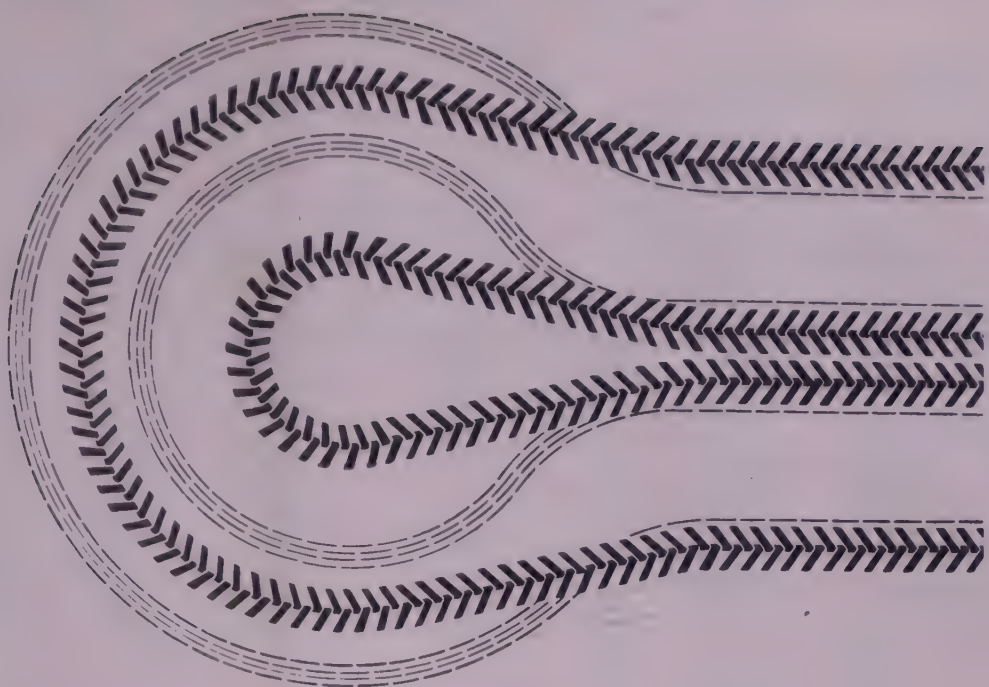
Processing

The forecast intake of fruit by the processing sector is about 247 kt. Despite the expected slight decline in citrus production, this is similar to the level in 1979-80. Of the total quantity processed, oranges will account for 212 kt. A fall in the intake of valencia oranges, due to the lower level of production, has been offset by an increase in the navel intake. The intake of lemons, grapefruit and mandarins is expected to remain unchanged from the previous season.

In 1979-80, there was an estimated 10 per cent rise in the consumption of citrus juice per person (see Table 2). This reflects the sharp increase in demand for fruit juice apparent during 1979-80 and this trend is expected to continue into 1980-81.

During the past decade, apparent consumption (production plus imports) of fruit juice in Australia increased from approximately 5.2 L per person in 1970-71 to 11.3 L per person in 1979-80. While the upward trend in domestic consumption of citrus fruit juice has followed that in

(Continued on page 12)



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touch with your Chamberlain John Deere dealer and arrange to test drive one of these John Deere tractors. It's a real experience.



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The Outlook for Citrus

(Continued from page 10)

the USA, the quantities consumed per person in the USA have been substantially larger. Apparent fruit juice consumption in the USA in 1980 is estimated at approximately 19 L per person, some 6 L above apparent consumption in 1970. If the domestic consumption pattern in Australia

follows that in the USA, it can be expected that the overall growth in Australian consumption of citrus juice will continue over the medium term.

The trend towards increased consumption of citrus juice per person has been strengthened by the development of convenient non-

fruit, this is similar to the level of the previous season.

Because the supply of cool-store apples is expected to be lower than during last season, they will provide less competition for navel oranges during the first half of the season. However, later in 1981, valencia oranges will encounter increased competition from a large apple crop. As a result, prices for navel oranges in 1980-81 are expected to be significantly higher, at around \$4.70 per 30 litre pack compared with \$4.00 in 1979-80, while valencia prices may be slightly lower, at \$4.50 per 30 litre pack compared with \$4.76 in 1979-80. Fresh market prices of 30 litre packs for all the other citrus fruits in 1980-81 are expected to be marginally higher than in 1979-80 — \$6.60 for lemons, \$5.00 for grapefruit and \$6.50 for mandarins. In 1979-80, the prices per 30 litre pack averaged \$6.45, \$4.89 and \$6.35, respectively.

Associated with the increase in consumption of citrus juice per person has been a fall in consumption of fresh citrus per person (see Figure 1). This trend is likely to continue into the 1980s if the pattern of Australia's citrus juice consumption follows that of the USA.

Exports

Exports of fresh citrus are forecast to be approximately 35 kt, almost 25 per cent lower than for the record 1979-80 season. Citrus production on the West Coast of the USA has recovered from the low 1979 level and Californian exports are expected to provide increased competition to Australian fruit in Asian markets. A good year for the South African citrus crop will add to competition in Europe and Asia. While exporters hope to retain some of the new markets gained in 1979-80, increased world export supplies and increased price competition from American exporters will result in fewer placement opportunities and lower prices on world markets, compared with the previous season.

Citrus production in the major producing countries of the Southern Hemisphere is forecast to rise by about 10 per cent during the 1980 season. A good season in Brazil and the increasing number of young trees reaching bearing age in Sao Paulo resulted in an orange crop forecast of 8.8 Mt, up to 10 per cent on last year's record output. South African citrus production is forecast to increase by 14 per cent to 727 kt during the 1980 season. After poor growing conditions during 1979 because of dry weather, a full recovery to normal supplies is anticipated in South Africa.

(Continued on page 13)

Table 2: QUANTITIES OF CITRUS FRUIT SENT FOR PROCESSING

Variety	1976-77 kt	1977-78 kt	1978-79 kt	1979-80 (p) kt	1980-81 (s) kt
Navel Oranges.....	36.6	45.9	50.0	48.0	58.0
Valencia (and other) oranges.....	119.8	148.8	145.0	165.0	154.0
Total oranges	156.4	194.7	195.0	213.0	212.0
Mandarins.....	1.3	1.0	1.0	1.0	1.0
Lemons and limes.....	20.8	20.2	20.5	20.5	20.5
Grapefruit.....	12.2	12.4	12.8	12.8	13.0
Total citrus	190.7	228.3	229.3	247.3	246.5

(p) Preliminary.

(s) Estimated by the BAE.

Sources: ABS, The Fruit Growing Industry; Australian Citrus Growers' Federation.

refrigerated long-life juice packs and intensified promotion. The emergence of these 'convenience' packs, which are aimed mainly at the younger population through vigorous promotion, is likely to result in the demand for citrus juice remaining at high levels at least in the first half of the 1980s.

As the domestic demand for orange juice again will exceed the available supply from domestically produced fruit, processors are expected once again to import large quantities of concentrates to supplement local supplies. With world prices expected to fall in 1980-81, due to increased world exportable supplies, duty payable by importers will exceed the level paid in 1979-80. Processors again will pay premiums to producers, raising the price of fruit sent for processing to a level just consistent with the duty-paid value of imports. It is expected that, under these conditions, processors will maintain the premiums of \$20/t to \$25/t paid on FISCC minimum prices during 1980-81.

The variable tariff lessens the degree of market uncertainty to domestic processors and converters by establishing a floor price of \$2.40/kg of TSS content for imported orange and mandarin juices and

provides a degree of protection to citrus growers.

Country factory minimum prices for most categories of processing citrus have been determined by the FISCC for 1980-81. FISCC prices for navels, valencias and seviles were increased by \$7/t, \$8/t and \$6/t, to \$83/t, \$98/t and \$96/t, respectively. Lemon prices were increased some \$5/t, to \$104/t, while grapefruit prices were unchanged at \$78/t. A price for mandarins was not determined. Overall, the FISCC price increases for the present season were greater than those which occurred for the 1979-80 crop (see Table 3).

Medium-term developments in the citrus industry, particularly in the juice sector, will remain uncertain as the developments depend mainly on the outcome of the proposed review of the variable tariff arrangements scheduled for 1982. Any changes to existing tariff arrangements will have important implications for the level of imports of concentrate as well as for domestic producers, processors and converters.

Domestic Fresh Market

Supplies of citrus to the domestic market in 1980-81 are forecast at 196 kt. Due to the relatively stable domestic demand for fresh citrus

Table 3: FISCC MINIMUM COUNTRY FACTORY PRICES FOR PROCESSING CITRUS

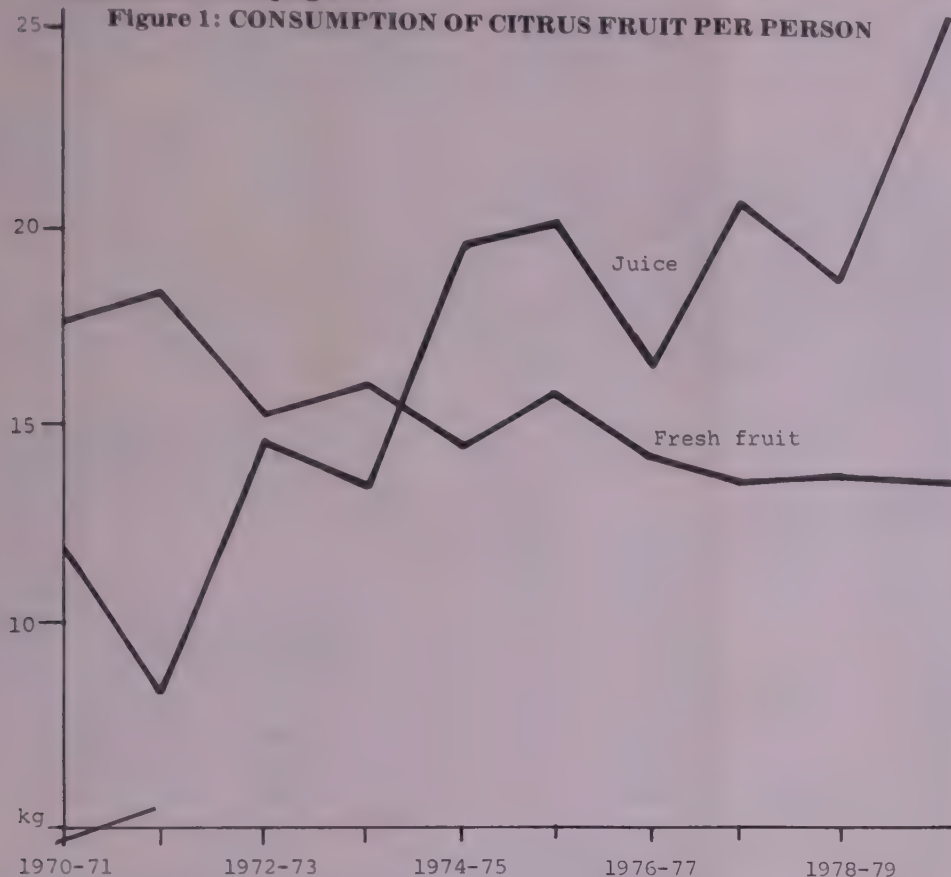
Year	Oranges		Lemons	Grapefruit
	Navel \$/t	Valencia \$/t		
1976-77.....	63.00	76.00	94.00	78.00
1977-78.....	63.00	76.00	94.00	78.00
1978-79.....	74.00	86.00	99.00	78.00
1979-80.....	76.00	90.00	99.00	78.00
1980-81.....	83.00	98.00	104.00	78.00

Source: Fruit Industry Sugar Concession Committee.

The Outlook for Citrus

(Continued from page 10)

Figure 1: CONSUMPTION OF CITRUS FRUIT PER PERSON



With favourable growing conditions, the U.S. crop has largely recovered from the previous season. The Californian orange crop, in particular, is forecast at just over 2 Mt, an increase of some 60 per cent over last season's level. This has important implications for Australian exporters, as California is our major competitor in Asia and the Pacific.

Although Australia's fresh citrus exports are shipped to 20 different markets, New Zealand continues to be Australia's major export market, taking almost one-quarter of total exports. However, because there has been a sharp increase in new planting since the early 1970s, citrus production in New Zealand is projected to expand significantly over the coming decade. Therefore, Australian exporters will find it increasingly difficult to compete with the New Zealand domestic fruit. The South-East Asian markets of Singapore, Malaysia and Hong Kong are becoming more important to Australia, taking in excess of 15 kt of fresh citrus during 1979-80 (34 per cent of total export sales). The Middle East is also developing as a long-term market for citrus exports. Quarantine problems still have to be overcome before the Japanese market is officially open to Australian exporters.

As the demand for fresh citrus fruit in these markets is expected to expand, the upward trend in Australian exports is forecast to continue during the 1980s if exportable supplies are available.

February, 1981

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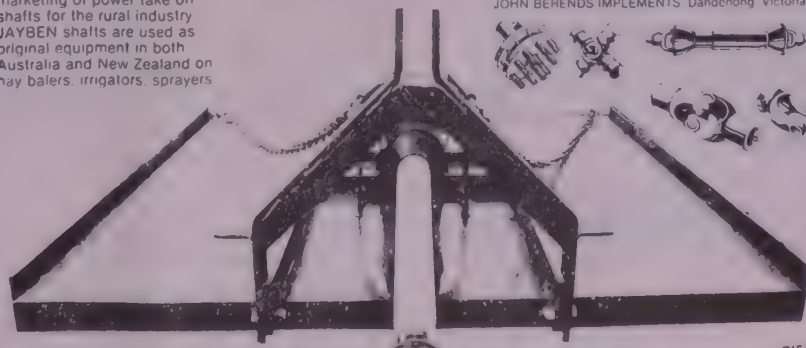
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AUSTRALIAN CITRUS NEWS

Tariff Protection Vital for Citrus Industry

(Continued from page 6)

represents the three sectors of the industry, i.e. growers, processors and convertors. Its composition includes three growers, three processors and three representatives of the Australian Fruit Juice Association, which is the National Association of convertors and processor/convertors, but not pure processors.

The Australian Citrus Industry Council acts as a forum for discussion on all matters affecting the entire Australian citrus industry, to collate statistics on forecasting, production and marketing of citrus fruits and processed citrus products, including imports of citrus juices, etc., to develop co-operation between the various sectors of the industry on matters of common interest, in particular matters pertaining to market research and promotion, and to consider the longer term prospects and trends of the Australian citrus industry.

Both the Australian Citrus Processors' Association and the Australian Citrus Industry Council have done quite a lot to improve understanding between the various sections of the industry, and have undertaken projects such as more reliable statistics, research and promotion of citrus fruits in general, standards for fruit juices and many other related subjects for the betterment of the citrus industry in general.

Marketing

Due to the large number of manufactures of juice products, there is severe competition in the marketplace for all types of juices and drinks. Such competition, of course is a healthy sign, as sales of citrus juice are rising. Inevitably, in some instances, severe price cutting takes place which, in the long term, would definitely be detrimental to the industry. It should also be kept in mind that consumption per head of citrus is rising and the figures set out below indicate this fact:

Estimated per Capita Consumption of Citrus per Head of population (kgs per head)

	Oranges	Lemons	Grapefruit	Mandarins	Total
1978/79					
(Australia)					
Fresh	10.8	1.4	0.9	1.8	14.9
Processed	17.2	1.7	1.3	0.8	21.0
	28.0	3.1	2.2	2.6	35.9
1979/80					
(Australia)					
(Expected)					
Fresh					14.0
Processed					26.0
					40.0

1979	
(USA)	
Fresh	11.2
Processed	40.4
	51.6

The juice industry in general is considered as a growth industry, and for the first time we have seen multinational companies entering the field of juice marketing by takeovers. Although large companies have established plants in most capital cities in Australia for reconstitution of their products, some smaller companies still remain local and sell their products in one market only.

Chilled juice shows the highest percentage growth, followed by the recently introduced long life products. Juices in cans show a slight decline. The long life products can be separated into two distinct sections, namely, juice packed in 2 litre PVC plastic containers, and juices packed in the Tetra Brik containers (250 ml juices and drinks) as well as 1 litre packed in cardboard containers.

New innovations in packaging of chilled juices are the 4 litre and 5 litre casks which have recently entered the market, and the 4 litre plastic long life products. In addition, long life juices packed in the cask have entered the marketplace, and it is anticipated that distribution of this particular pack will be more significant in the future.

It is not the purpose of this paper to discuss detailed marketing strategies of particular companies, but to give indications of growth areas and innovations in packaging of citrus juices.

Tariff

The title of this paper is "The Outlook for Citrus". It is very hard indeed to specifically determine what the real outlook would be, as this will depend on the Government's decision after the I.A.C. hearing. If the present tariff is either reduced or removed, the outlook for citrus will be very gloomy indeed. In fact, such an action will destroy the industry, with the eventual socio economic results being catastrophic not only for the citrus growers, but also for the towns in which they live.

Current F.O.B. prices for orange concentrate ex Brazil indicate that the value for oranges to growers in that area range from \$30 to \$35 per tonne — approximately one third of the prices being paid to Australian growers. It is not an exaggeration to say that any removal or reduction of the present tariff would lead to the destruction of the citrus industry in Australia. It would be hoped, therefore, that a responsible Govern-

ment would not make any decision that would destroy one of the most viable primary industries in Australia today.

On the other hand, the industry cannot afford to take for granted that the Government's decision will always be a favourable one, and it is the industry's responsibility to ensure that the decision-makers at high Government level are fully aware of the consequences of any change in the present tariff protection that the industry presently enjoys.

It should be noted that the tariff is the only protection the industry has against cheap imports, and that all sections of the industry and Government are happy with the present situation.

So, the outlook for citrus, irrespective of numbers of trees, yields per acre, prices per tonne of fruit, etc. will mean nothing if any action is taken to upset the present tariff system; however, if this is maintained we see a bright outlook for the citrus industry in Australia in the future.

Plant Variety Rights

The Australian Agricultural Council has decided that the proposed plant variety rights scheme will be restricted to horticultural, ornamental and other selected pasture and fodder species as determined by Agricultural Council.

Major field crop and annual pasture plants will not be included.

The Minister for Primary Industry, Mr. Peter Nixon said this change would not alter the Commonwealth's earlier undertaking that draft legislation be tabled in the autumn session of Federal Parliament.

The legislation will lie on the table of the House, to enable detailed public debate, and will not proceed through the Parliament unless it has the support of Council.

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Fresh Citrus Exports

DECEMBER SUMMARY

AUSTRALIAN FRESH FRUIT EXPORTS BY STATES (Tonnes)

	QLD.	N.S.W.	VIC.	S.A.	W.A.	Total
Grapefruit	1.6	5.6	1.8	1.9	—	10.9
Lemons	5.0	11.2	1.5	0.2	23.5	41.4
Limes	0.1	—	—	—	—	0.1
Oranges	35.3	26.9	83.2	2270.3	2.4	2418.1
	42.0	43.7	86.5	2272.4	25.9	2470.5

AUSTRALIAN FRESH FRUIT EXPORTS BY DESTINATIONS (Tonnes)

	Grapefruit	Lemons	Limes	Oranges	Total
P.N.G. & Sol. Islands...	3.4	3.8	0.1	48.4	55.7
Pacific Islands	6.9	11.2	—	23.7	41.8
New Zealand	—	—	—	704.2	704.2
Antarctic	0.1	0.1	—	0.1	0.3
Singapore	—	21.9	—	758.5	780.4
Malaysia	—	1.0	—	677.8	678.8
Phillipines	—	1.4	—	—	1.4
Indonesia	0.1	1.8	—	132.0	133.9
Hong Kong	0.1	—	—	37.8	37.9
Bahrain	0.1	—	—	—	0.1
U.A.E.	0.2	0.2	—	—	0.4
Mauritius	—	—	—	35.6	35.6
	10.9	41.4	0.1	2418.1	2470.5

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River Murray Commission Storages, Diversions and Water Supply

JANUARY SUMMARY

STORAGES	Capacity Megalitres	Week ending 29-1-81 Megalitres
Hume Reservoir	3,038,000	1,315,000
Lake Victoria	680,000	451,000
Menindee Lakes	1,794,000	594,000
Dartmouth Reservoir	4,000,000	1,904,000
Burrinjuck	1,026,000	31/12/80 410,400
Blowering	1,628,000	31/12/80 716,320

WATER FLOWING TO SOUTH AUSTRALIA (River Murray)

Week ending 24-12-80	48,000
Monthly entitlement for December	217,000
Total for December to 31-12-80	196,000
Total for November	225,000

WATER QUALITY (River Murray)

(Average quality for week — total dissolved solids in parts per million)

	30-1-80	28-1-81
Swan Hill	118	134
Euston	173	157
Red Cliffs	259	194
Merbein	343	252
Lock 9	270	378
Lake Victoria	270	342
Berri	318	426
Waikerie	444	564
Mannum	444	594
Murray Bridge	360	576

— (Extracts from River Murray Commission Reports and
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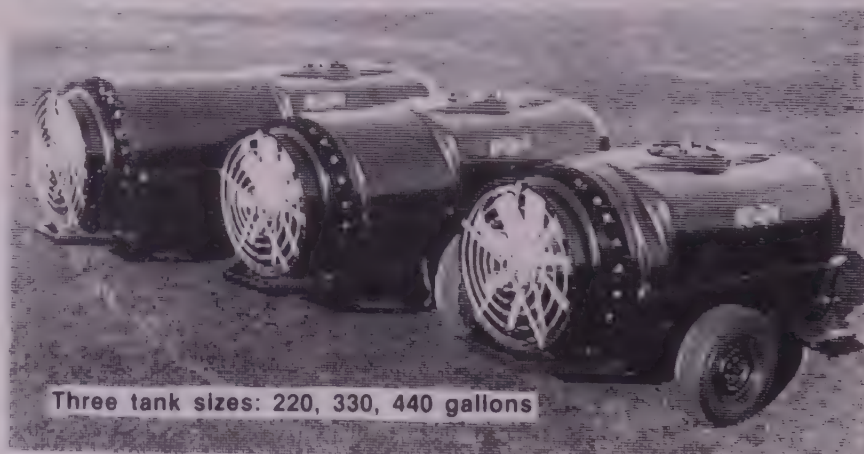
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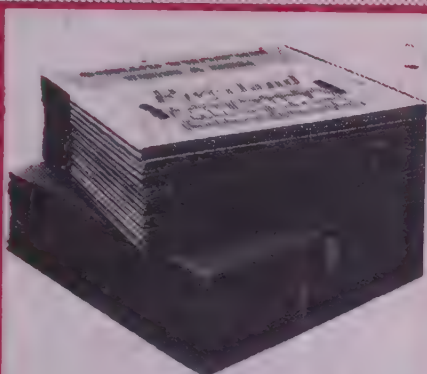
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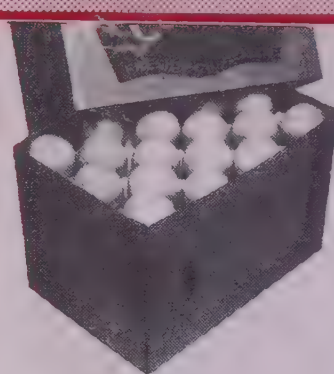
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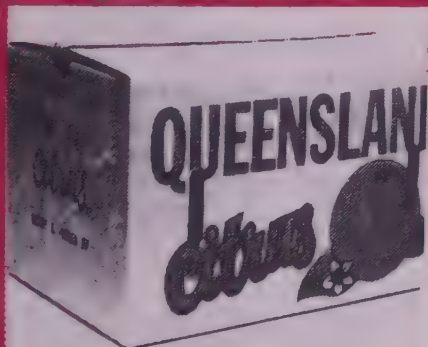
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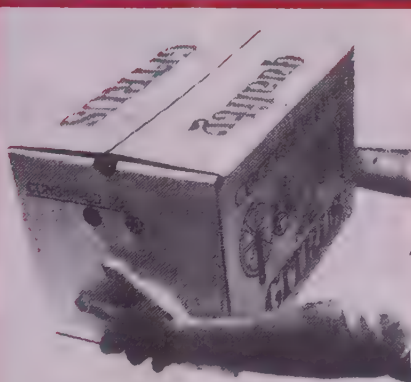
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EDITOR'S NOTE

The horticultural industries must strongly oppose the current moves for the introduction of a 35 hour week.

The introduction of shorter hours, thus increasing the cost per man/hour would be disastrous for the horticultural industry which has only limited opportunities for mechanisation and other labour saving techniques.

It would further increase the present high levels of unemployment and would severely aggravate our problems in controlling the rate of inflation.

Australia must not get carried away with the benefits of the resources boom to such an extent that common sense economic decisions no longer prevail.

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Organic manures are as valuable now in building soil structure and providing essential nutrients for plant growth as they have been for centuries.

To accommodate the demand for organic manures, Adelaide & Wallaroo Fertilizers Ltd., has introduced an Organic range, containing not only the natural goodness of old-fashioned manures but many of the physical qualities of modern fertilizers.

The three products have the consistency and texture of modern fertilizers, a guaranteed nutrient and the ease of handling and distribution so often lacking in the past.

Mr. Ron Fuhrer, of Adelaide & Wallaroo, said the new products were not designed to replace current fertilizer programmes, but should be seen as an alternative to current practices such as cover cropping, spreading chicken manure and using other methods of building and conditioning soils.

The three products provide a range of phosphorus and nitrogen levels with no added urea or other inorganic nitrogen.

Top Base Organic contains 2.5 p.c. organic nitrogen and 1.5 p.c. phosphorus; Top Humus Maker contains 3 p.c. nitrogen and 3 p.c. phosphorus; and Top Organic Manure contains 5 p.c. organic nitrogen and 5 p.c. phosphorus.

Mr. Ron Fuhrer said one of the new products, Top Base Organic, provides a

viable and financially attractive alternative to spreading chicken manure. Chicken manure is not always available and often expensive and difficult to handle.

Mr. Fuhrer said the organic manures have most application in intensively cropped situations and are being commercially used on a wide range of crops including lettuces, potatoes, celery, onions, carrots, cabbages, strawberries and cauliflowers. They are being used in glasshouses and on vineyards and orchards.

Organic manures build soil structure, visibly increasing the water-holding capacity particularly in sandy soils, and reduce nutrient losses due to leaching. Heavier soils are more friable and easier to work when treated with organics.

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Adelaide & Wallaroo district officers can be contacted for recommendations on spreading the new Top Organic range.

Recipe of the Month

EASY LEMON MERINGUE PIE

1 package (about 85 grams) lemon pudding and pie filling; $\frac{3}{4}$ cup sugar; juice of 1 fresh lemon; 1- $\frac{2}{3}$ cups water; 3 egg yolks, well beaten; grated peel of $\frac{1}{2}$ fresh lemon; 1 (approximately 23 centimetre) frozen deep dish pie shell, thawed, baked.

In saucepan, combine pudding mix and sugar. Gradually stir in lemon juice and water. Blend in egg yolks. Bring to full boil over medium heat, stirring constantly until thickened. Stir in lemon peel. Pour into baked pie shell. Top with meringue, sealing well at edges. Bake at 350 degrees F (177 degrees C) for 12 to 15 minutes until golden brown. Cool 2 hours before serving. Makes 6 to 8 servings.

Meringue

3 egg whites; $\frac{1}{4}$ teaspoon cream of tartar; 6 tablespoons sugar.

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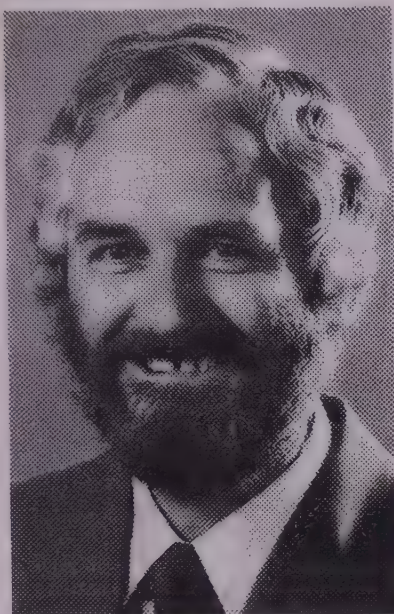
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Industry Doings

NEW COC SECRETARY

The chairman of the Citrus Organization Committee, Mr. P. T. Sanders, has announced the appointment of Mr. David Cain as secretary. This follows the retirement of Mr. M. T. Pettman, who has held the position since 1979. Mr. Cain is an associate of the Australian Society of Accountants, an associate of the Chartered Institute of Secretaries and Administrators, a past District Governor of Lions Clubs International and is currently chairman of the Lions Save Sight Foundation. Mr. Cain has had considerable experience as an administrator including three years as General Manager of Channel 8 Mildura, which covers the citrus growing area of Victoria, and 12 years with an advertising agency.



Mr. David Cain

Mr. Sanders said that Mr. Cain's appointment came at a time when the Citrus Organization Committee was en-

deavouring to secure an adequate return for all sections of the industry. Pressures applied by large buyers in the past had tended to force prices down in the face of continued increases in cost. This situation must be corrected before it gets out of hand, said Mr. Sanders.

Mr. Pettman has retired to live at Paradise Point on the Gold Coast of Queensland and ACGF and A.C. News extend to him best wishes for good health and happiness in his retirement.

★ ★ ★ ★

FISCC TO MEET ON ORANGE PRICES IN MAY

The Fruit Industry Sugar Concession Committee has announced that it will consider the determination of minimum factory prices for navel, valencia and seville oranges of the 1981/82 season at a meeting to be held on Tuesday, 26th May, 1981.

The question of whether prices would be set for mandarins will also be dealt with at the May meeting.

★ ★ ★ ★

NEW FISCC CHAIRMAN

The chairman of the Fruit Industry Sugar Concession Committee, Mr. A. R. Kyburz has been appointed to a position as assistant secretary in the Dairy Products Division of the Department of Primary Industry and will be relinquishing his position as FISCC chairman.

Mr. Kyburz has been chairman of the FISCC since 1973 and held this position in conjunction with his duties as assistant secretary of the Sugar and Horticultural Crops Division of the Department.

His transfer to the Dairy Products Division means a new FISCC chairman and details of this appointment are expected shortly.

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Factory Lemon Prices Reduced — Grapefruit Again Unchanged

The FISCC minimum prices for factory deliveries of lemons in the 1981/82 season have been reduced by \$7 per tonne.

The decision was taken at a meeting of the Fruit Industry Sugar Concession Committee held in Sydney on Tuesday, 20 March.

Minimum prices for 1981-82 season grapefruit were left unchanged from the previous year.

Details of the minimum prices to apply for the 1981-82 season are as follows:

Delivered to factory located at:

	Capital City Metropolitan per tonne	Country per tonne
Lemons	\$103	\$97
	Over 201 km from nearest Capital City per tonne	81 to 201km (inclusive) from nearest Capital City per tonne
Grapefruit	\$86	\$78

LEMONS

Lemon growers will be bitterly disappointed at the reduced prices in view of the fact that their costs of production are going up by at least 10 per cent per annum. Based on the FISCC minimum price arrangements the industry's returns from factory lemons will drop by an estimated \$170,000 this year; a year

when the crop is already down by about 12 to 15%.

The effect of the reduction will be acutely felt in the NSW coastal areas where lemons comprise some 35% of the plantings.

In its submission to the FISCC the ACGF sought a price of \$118 per tonne for deliveries to all factories. The processors requested a price of \$80 per tonne for country factories and \$86 per tonne for metropolitan factories.

Undoubtedly, the cause of the reduction in price is the potential oversupply situation which exists for lemons this season, even allowing for the lower crop.

Information submitted to the FISCC meeting indicated that excess stocks of lemon juice concentrate at the end of the 1980/81 season would be the equivalent of at least 7,700 tonnes of fruit. With a forecast 1981/82 crop of 41,000 tonnes (down 12-15% from 1980/81) it was expected that fresh lemon exports would take 2,000 tonnes, the domestic fresh fruit market would absorb 15,000 tonnes and this would leave about 24,000 tonnes for processing. If this quantity of lemons was processed and added to the excess stock, it would result in a total equivalent availability of around 32,000 tonnes.

With the Australian juice market only able to absorb around 20,000 tonnes, this would mean an increased excess stock carry over into 1982/83 (a potential heavy crop year) unless large export sales could be made of lemon juice concentrate.

During 1980/81 exports of lemon juice concentrate have been estimated at the equivalent of about 12,000 tonnes of fruit. These sales were made possible by the high overseas price for lemon oil and a good demand for juice concentrate. Those circumstances do not appear to exist for 1981/82, with reduced oil prices and a very competitive market for lemon juice concentrate.

In the submissions to FISCC, consideration was given to the possibility of a two tier price arrangement, which would have set a price for lemons used in sales of juice on the Australian market and another price for lemons used in export sales of juice. Administrative difficulties appear to present serious problems in introducing such a scheme.

The options available to the FISCC were probably to either maintain a high price, as requested by ACGF, with the possibility of a percentage of the crop not having a market outlet, or to reduce the price in the hope that all the available fruit would be processed and processors would be able to make good sales of lemon juice concentrate to export

markets. FISCC obviously opted for this latter approach.

From the growers' point of view the decision announced by the FISCC appears likely to provide a better financial result than would have been achieved under a two price arrangement, provided all the fruit can be processed and the excess stocks of lemon juice concentrate reduced.

In twelve months time we will know the answer.

GRAPEFRUIT

For grapefruit the growers requested an increase of \$12 per tonne while the processors sought no change.

Factors presented to the FISCC by the growers included:

- The 1980/81 crop had yielded an estimated 28,360 tonnes and the 1981/82 crop would be similar at 28,766 tonnes.
- Of the 1980/81 crop, 900 tonnes had been exported fresh, 8,700 tonnes had been sold on the domestic fresh fruit market and an estimated 18,760 tonnes had been processed by factories. A similar distribution pattern was expected to apply in 1981/82.
- The equivalent of 3,000 tonnes of fruit had been exported as grapefruit juice concentrate.
- Excess stocks of juice concentrate amounted to the equivalent of 4,000 tonnes.
- Imports of grapefruit juice did not pose any threat to the industry.
- Growers costs were rising by about 10% per annum.
- The factory price for grapefruit had remained at its current level since 1975/76.
- Progress was being made in improving the consumer offtake of grapefruit juice and this would further benefit from the CSIRO Research Project.

The processors submitted that:

- The grapefruit problem was similar to lemons.
- Sales of grapefruit juice in Australia were being made as low as 19-20c per litre.
- It was impossible for Australia to compete on world markets for grapefruit juice concentrate.
- Bearing tree numbers are increasing.
- The extraction of grapefruit oil is of no value in the total economics of the industry.

For both of the afore mentioned citrus varieties it is obvious that extensive promotional activity is required to increase the domestic consumption of lemon and grapefruit juice products.

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Horticultural Industries Take Firm Line on Closer Economic Relationships with New Zealand

Speaking after a meeting of the Horticultural Industries Working Party, held in Canberra on March 18th and 19th, 1981, the president of the Australian Horticultural Growers Council (AHGC), Mr. Hugh Cope, made it clear that horticultural producers were unanimous in their attitude that any freeing up of trans-Tasman trade must be on the basis of total equality.

Mr. Cope said, "The Working Party, composed of the AHGC Executive and representatives of other fruit and vegetable industry groups, was alarmed at the extensive range of Government assistance measures available to New Zealand to encourage export of horticultural products".

Having studied a number of detailed background papers, prepared by the Bureau of Agricultural Economics and the Department of Primary Industry, the Working Party re-stated its policies defined at an initial meeting held in Sydney on January 14th, 1981.

These are:

1. That clear guidelines must be established for the equalising of trading opportunities for the horticultural industries of the two countries as from an agreed common date before any agreement is reached on a C.E.R.
2. That export incentives, export performance, taxation incentives and all other assistance measures must

be either equalised, neutralised or excluded as from the agreed common date.

3. That tariffs, duties and quantitative restrictions on Australian exports to New Zealand must be abolished from the agreed common date.
4. That steps be taken to ensure that a uniform exchange rate applies for trade between Australia and New Zealand. That adequate anti-dumping procedures be provided for under any such agreement.

"To accept anything less than these conditions would seriously jeopardise the future viability of Australian horticultural producers and self sufficiency in the production of essential food for all Australians," Mr. Cope said. He added that industrial commodity groups would reserve the right to make applications for admission to the deferred list if special problems should be encountered.

The Working Party's policies will be conveyed to the Ministers for Primary Industry and Trade as soon as possible.

Citrus Report — February 1981 — New South Wales

Severe drought conditions were relieved in coastal areas during the month with widespread and useful rain. Inland districts continued hot and dry requiring regular irrigation to maintain tree health.

Harvesting of the 1980/81 main crop of valencias and grapefruit was almost completed in all districts except for the mid Murray.

GOSFORD

Widespread and useful rain relieved severe drought conditions. Harvest of valencias is nearing completion with a decline in fruit quality due to re-greening and granulation. Small quantities of late summer lemons are still being harvested. The 1981/82 crop is below normal but fruit size has increased significantly since the rain. Pests and disease continue at low levels.

WINDSOR

Drought breaking rain of 176 mm on 15 days was recorded at Windsor. Citrus trees responded quickly to the rain with improvements in tree health and fruit size.

NARROMINE

Warm, dry weather was experienced with only slight relief to drought conditions from scattered showers that totalled 36mm for the month. Developing crops are sizing satisfactorily and a larger overall crop is expected in the coming season.

M.I.A.

Approximately 15% of the valencia crop remains to be harvested. Quality has deteriorated due to re-greening and granulation. Prices have continued at \$110/t for processing and \$130/t for fresh market. Tree health is good with strong autumn growth. Red Scale is building up in some blocks.

MID MURRAY

Harvest of valencias (only 40% completed) and grapefruit (80% completed) continue. Fresh market demand and prices were satisfactory although re-greening continued as a problem with most valencia lines. Although tree health is good, crop prospects for 1981/82 are below normal due to previous heatwave conditions. Red scale has also built up late in some blocks.

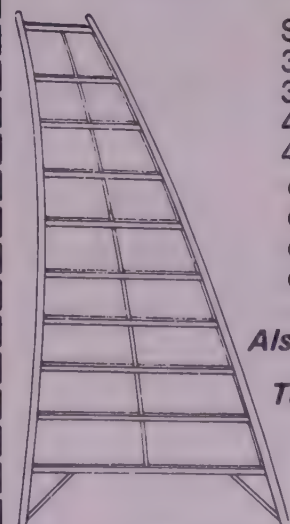
LOWER MURRAY

Further heatwave conditions caused some damage to foliage and required additional irrigation during the month to maintain tree health. The valencia crop is 85% completed with re-greening and rough rinds becoming marketing problems. Crop prospects for 1981/82 are below normal, particularly navels, mandarins and lemons. Pests and diseases continue at low levels.

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News in Brief

REPORTS OF FREEZE IN FLORIDA

Reports indicate that the State of Florida in the USA has had a severe freeze early in January which is likely to result in a 20% drop in production for the current season.

Florida was originally expecting to harvest a crop of 3,592,000 tonnes of valencias in 1980/81, compared with the record crop of 3,624,000 tonnes harvested in 1979/80 and 2,980,000 tonnes in 1978/79.

The expected loss of 20% (if realised) would reduce the valencia crop to 2,874,000 tonnes.

It is understood that Florida has already increased the price of orange juice.

Although the minimum FOB price for Brazilian orange juice concentrate was set by the Brazilian Government in 1979/80 at \$US900 per tonne, due to a heavy stock situation, sales have been permitted by the Brazilian Government during the later part of 1980 at prices as low as \$US600 per tonne.

When the "Freeze" occurred Brazil stopped all export sales but selling was resumed on January 30, and the Brazilian Government has now set the minimum FOB price at \$US1,000 per tonne. This is currently equivalent to an FOB Brazil price of approximately \$1.33 per kg T.S.S.

★ ★ ★ ★

FISCC AMENDS MINIMUM PAYMENT TERMS FOR CITRUS FRUIT

The fruit Industry Sugar Concession Committee has decided that as from the 1981/82 season the Prescribed Conditions applicable to the payment of sugar rebates to processors of citrus and berry fruits will be amended to provide for a minimum first payment of 50% one month after the month of delivery of fruit to the processor. Previously this initial payment was 40%.

The minimum second payment due three months after the month of delivery will remain at 20% and the final payment due six months after the month of delivery will now be 30% instead of 40% as previously.

The committee's decision is in line with an ACGF submission to the FISCC which sought this minor improvement in the minimum payment terms as a step towards the eventual achievement of the ACGF policy on this matter.

Although payments for oranges in NSW, Victoria and South Australia are, generally speaking, currently being made on terms more favourable than the FISCC base conditions, payments for oranges in the other States and for lemons and grapefruit in all States are subject to the minimum FISCC conditions.

★ ★ ★ ★

RECORD ORANGE CROP FORECAST FOR BRAZIL

Orange production in Brazil in the 1980/81 season is expected to show an in-

Page 6

crease of about 10% over the 1979/80 level to reach a record 8.8 million tonnes.

The increased production is a result of good growing weather, improved yields and additional trees.

Exports of frozen concentrated orange juice are forecast to hold at around the 1979 level of 330,000 tonnes.

The outlook is for a continued rise in Brazilian citrus production over the next 2 to 4 years. Further expansion will depend on domestic and export demand for fresh fruit and concentrated juice.

Producer prices for the 1980/81 season have been set at the equivalent of \$A2.42 per 40.8 kg box (approximately \$A60 per tonne). As part of the price agreement made between citrus growers and the juice industry a payment of \$20 is made to the producers on the signing of a contract, \$20 on or about February 28, 1981 and the final \$20 in 45-day promissory notes when final deliveries are made to the factory.

— U.S. Foreign Agriculture

★ ★ ★ ★

HORTICULTURAL INDUSTRY DETERMINES POLICY ON FUTURE TRADE WITH NEW ZEALAND

A special meeting of Australian Horticultural Producer Organizations was convened by the Australian Horticultural Growers Council in Sydney on January 14, 1981 to consider policy in respect to the current negotiations to establish a closer economic and trading relationship with New Zealand.

Also present at the meeting were representatives of the Commonwealth Department of Primary Industry and State Department of Agriculture Officers. A special guest was Mr. Bruce Lloyd, MHR for Murray who for the past five years has been chairman of the Horticultural Sub-Committee of the Government Parties Rural Committee and is now Parliamentary Secretary to the Minister for Primary Industry, Mr. Nixon.

The meeting was called to receive a report on the NFF sponsored Trade Delegation which visited New Zealand in December last year, and to consider a Joint Statement of General Principles relating to the negotiations which had been agreed to during the discussions.

AHGC was officially represented at the NZ discussions by Mr. Gordon Wilson of Queensland.

The Sydney meeting agreed unanimously that agreement by the Australian Horticultural Industry to the General Principles would be subject to:

- (1) The satisfactory finalisation of matters relating to equality of trading opportunities between the two countries, such as Export Incentives etc., and the removal of all obvious and hidden assistance measures.
- (2) Full account being taken of differential fiscal measures, other than export incentives, such as cur-

rency decisions, that may cause bilateral trading advantage.

- (3) The provision of more detailed information by the Departments of Primary Industry and Trade and Resource and the Bureau of Agricultural Economics on the Implications for individual Australian horticultural commodities in the adoption of the negotiating principles.

The meeting decided to establish a special working group comprising the AHGC Executive Committee and co-opted industry specialists to formally present the views of the horticultural industry to the Department of Primary Industry and the Minister for Primary Industry and to negotiate with the Government on the matter.

★ ★ ★ ★

NEW PACKAGE BOOSTS FRUIT QUALITY

Adelaide housewives have been the first in the world to benefit from a new packing method for citrus.

It involves shrink-wrapping each individual fruit in high density polythene, similar in character to freezer wrap.

Grapefruit packaged this way went on sale in Adelaide during December — the world's first commercial marketing of fruit packaged in this way.

The fruit, in net packs of four, with a card containing recipe suggestions attached, was packed by the Waikerie Co-op. Producers Ltd.

Mr. John Gregory, the company's packing house manager, said there normally was a shortage of grapefruit in SA during January/February, with fruit being imported. The new shrink-wrapping procedure would allow the storage of fruit in top quality to meet the market requirements in those months.

The method was developed by the SA Dept. of Agriculture in co-operation with the Waikerie Co-op.

The composition of the high density polythene film allows ethylene and other gases released from the fruit during ripening to escape, but retains the fruit's moisture.

Mr. Barry Tugwell, Senior Research Officer (Fruit Storage) with the SA Dept. of Agriculture says the high density polythene wrap has an additional benefit with grapefruit. The fruit loses some of its bitterness when stored in the film and so becomes more palatable.

The new packaging is suitable for all citrus but is only being used on grapefruit at this stage.

It seems likely that lemons might be packed for local markets using the new technique but it is unlikely that Australian housewives will see oranges packed in this way.

(Continued on page 8)

Industry Doings

(Continued from page 3)

RATES OF PAY INCREASED UNDER FEDERAL FRUIT GROWING AWARD

Following on a work value hearing before the Conciliation and Arbitration Commission the rates of pay in the Federal Fruit Growing Award have been increased by \$8.00 per week.

In the labour intensive fruit and vegetable industries this will place further pressure on growers in battling the cost price squeeze.

The increase applies from the first pay period on or after January 30th, 1981.

★ ★ ★ ★

LEMON RESEARCH

ACGF has agreed to ask the CSIRO Food Research Laboratory to provide cost details etc., for a research project to improve the palatability and consumer image and acceptance of lemon juice and lemon juice products.

The Lemon Marketing Board of NSW has indicated that it would be prepared to contribute funds towards the cost of a research project.

★ ★ ★ ★

NUGAN EXPANSION

The Nugan Group Limited, has decided to expand the company's juice factory at Griffith.

The company has developed substantial new export business in the last twelve months and has opened up new markets for Australian citrus around the world.

In addition the company has just signed several long term contracts with major Australian users of orange juice for increased supply in future years.

Expansion of the company's juice extraction, evaporative and storage facilities will be necessary to meet the Group's commitments and to absorb the increased production of the Group's citrus growers.

★ ★ ★ ★

JUSFRUTE TO BOOST CAPACITY AT GRIFFITH

Jusfrute Limited will increase its processing capacity at Griffith by 60 per cent in a \$100,000 expansion program.

The expansion, will help complete the company's processing rationalisation program following the closure of the Leeton plant last December.

The increase in capacity will make the Griffith operation the largest throughput plant of the Jusfrute group.

Next season the capacity of the plant will be more than 150 tonnes a day.

This will mean that in a season, the 10,000 tonnes processed at the Griffith and Leeton plants last year will be easily passed.

March, 1981

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News in Brief

(Continued from page 6)

JUSFRUTE CLOSES LEETON PLANT

Processing of 1980/81 season valencia oranges at the Leeton plant of Jusfrute Ltd., ceased on December 19.

An announcement from the company said the closure of the plant was due to climatic conditions and the state of the juice industry at the present time.

The decision resulted in the retrenchment of about seven male employees.

Leeton Citrus Juices (Quelch) and Griffith Producers Co-op. Ltd. immediately announced that they would take all available valencia oranges which had been affected by the Jusfrute decision.

IAC Inquiry on Orange Juice

The Industries Assistance Commission has been requested by the Government to review the operation of the variable tariff arrangements applying to orange and mandarin juices and to inquire and report by June 30, 1982 on whether the existing assistance arrangements applying to these juices should be varied, and if so, the nature and extent of any variations.

The Government has also requested that, if during the course of its inquiry, the Commission finds evidence of significant duty evasion under the present assistance arrangements and considers that short term action should be taken to correct the situation pending provision of its report, it provide the Government with an interim report on the matter.

The present variable tariff arrangements, which have created a level of stability in the citrus industry not previously experienced were introduced by the Fraser Government in 1979 and are due to expire in March 1982.

ACGF has appointed a special sub-committee comprising Fred Walpole (Central Coast), Rob Miller (Sunraysia), David Cain (COC-South Australia) and ACGF General Secretary, Hugh Cope, to prepare a report on the options available to the Federation in its approach to the inquiry and to itemise the subjects on which evidence would need to be prepared and presented to the Inquiry. This report will be considered at the ACGF Annual Conference at Loxton in May.

It is intended that any evidence which member organisations may wish to present to the Inquiry will be presented through ACGF so that the information can be co-ordinated and presented as a total industry approach.

ORANGE TREE ERECTED AT WAIKERIE

A 12-metre high fibreglass "Orange Tree" has been erected at Waikerie in South Australia to symbolise the town's major role in the citrus industry.

The tree was installed by Waikerie Co-op. Producers Ltd. at their road-side fruit kiosk on the Sturt Highway.

"BIG ORANGE" EXPANSION IS PLANNED

The "Big Orange" Complex at Berri in South Australia is planning a further expansion in 1981.

The complex has now been open for twelve months and during that time 230,000 visitors have visited it.

Consideration was now being given to adding a large kiosk and sales area to the complex.

AUF TAKES ACTION ON MARKET PROTECTION

Australian United Fresh (AUF) held a special meeting in Sydney on January 15, to discuss the possibility of achieving an improved and uniform system of market protection for producers sending fresh fruit and vegetables to wholesale markets.

The move for AUF to tackle this problem followed on many years of unsuccessful attempts by the AHGC to achieve a greater level of uniformity through the Australian Agricultural Council, (meetings of State Ministers of Agriculture), and the AHGC referred the matter to AUF because of its direct involvement with market wholesalers and with State Market Authorities.

Resulting from the meeting a series of significant and positive recommendations will be forwarded to State Ministers, particularly in respect to Victoria, NSW and Queensland, and to other interested persons for detailed consideration.

USES FOR LEMONS SUGGESTED

Following on recent ACGF publicity concerning problems being experienced by the industry in the marketing of lemon juice, a Miss Vonny Helberg, of Tasmania, wrote to "The Murray Pioneer" at Renmark with some ideas on how to solve the problems.

One idea was that lemon cubes (similar to soup cubes) might be packaged.

Anyone desiring a hot lemon drink could put one of these lemon cubes in a cup, add hot water and honey — and there you are, the hot lemon drink so valuable in the treatment of colds and flu.

Another idea was the production of a lemon lozenge for "Sportspersons" — the in between games reviver for where and when lemons are unavailable.

Finally why not a canned or dry packaged lemon sago? The recipe for lemon sago is in most cook books and is very simple — just lemons, sago, golden syrup, water and sugar. Orange sago can be made in exactly the same way.

Thank you for your ideas, Miss Helberg!

Assistance to Attend Internat. Horticultural Congress

Financial awards totalling around \$3,000 will be made available to support the attendance of Australian horticulturists at the 21st International Horticultural Congress to be held in Hamburg, Federal Republic of Germany in August 1982.

This was announced following the inaugural meeting of the Horticultural Congress Trust by its Chairman, Mr. Graham Gregory of the N.S.W. Department of Agriculture. Other trust members are Mr. Don Kidd, Chairman of the Queensland COD, and Mr. Alan Newport, immediate past President of the Australian Nurserymen's Association, both of whom represent the Australian Horticultural Growers' Council and Dr. Barry McGlasson of CSIRO Division of Food research.

The grants will be financed from investments made with surplus monies following the conduct of the 21st International Horticultural Congress in Australia in 1978. The funds had been contributed by Australian horticultural industries said Mr. Gregory and it was the Congress organising Committee's wish that they be invested and the proceeds utilised to the benefit of Australian horticulturists.

The awards which will each be valued at between \$1,000 and \$1,500 will be granted to those applicants who in the opinion of the trustees will gain the greatest value to both themselves and their particular horticultural industry by attending the 21st Congress. Applicants under the age of 40 years who would find it difficult to otherwise raise the full amount of finance required for attendance will be favoured. Successful applicants will be required to prepare a 2,000 word report to their particular industry on the benefits achieved from the award. Mr. Gregory said that applications for awards will be called in July 1981.

Although the amount is relatively small, the trustees hope that further contributions to the trust fund would increase the amount which could be made available. Mr. Gregory said he would welcome any inquiries in this regard which may be directed to him at P.O. Box K220, Haymarket, N.S.W. 2000.

March, 1981

High-density Citrus Plantings

J. B. Forsyth, Principal Horticulturist (Citrus), N.S.W. Dept. of Agriculture

Research confirms that high-density plantings offer a promising means of combating the rising cost of citrus growing by increasing early productivity and making better use of resources. A summary is given here of the principal findings obtained in some Department of Agriculture density trials which have been made during the past 20 years. These trials have included study of the influence of tree spacing, hedging, thinning, rootstocks, and dwarfing inoculations.

Citrus growers have adopted many new practices in orchard culture and management in order to achieve higher productivity and reduce costs. Among these are bulk handling, mechanization, hedging, improved nutrition and pesticide programmes, more efficient irrigation, and increased planting densities.

Costs of producing and marketing citrus are continuing to rise, although returns are not being maintained. For their undertakings to remain viable, growers must look to higher yields per hectare and earlier production from new plantings, make more efficient use of resources — land, fertilizer, irrigation and pesticides — and reduce the high

labour cost of harvesting.

Provided cultural conditions and management are good, high-density plantings can achieve these objectives.

PLANTING DENSITY TRENDS

Older citrus plantings normally had the same distance between rows as there was between trees in a row. The actual spacings in these square plantings depended on which of the main districts they were in:

	Spacing	Trees/ha
Coastal	6m x 6m	269
M.I.A.	6.7m x 6.7m	222
Murray	7.3m x 7.3m	188

Vigorous rootstocks, such as rough lemon and sweet orange, were often planted, and high production per hectare could be achieved when the trees became very large and filled the available growing space. The plantings were difficult and expensive to spray and harvest, although hedging and topping have been shown to reduce the problems and costs.

Since the 1950s double planting of citrus has been widely adopted in new plantings. For instance, in the M.I.A., where the less vigorous *Poncirus trifoliata* rootstock is used extensively, a spacing of 6.7m x 3.3m, with a density of 444 trees/ha, has become common practice. In a double planting tree rows should be orientated north-south where possible, so that when a hedgerow is developed, or hedging carried out, maximum sunlight is received by the whole of the tree's fruit-bearing canopy. This double planting has increased early production and made more efficient use of resources as compared with the older square planting system.

(Continued on page 10)



High density citrus plantings make more efficient use of resources (fertilizers, irrigation and herbicides). Thorough spraying for pests and disease control is made easier with this oscillating boom spray equipment.

March, 1981

AUSTRALIAN CITRUS NEWS

OVERSEAS HORTICULTURAL STUDENT

Seeking 2 or 3 months practical training on Australian citrus grove between September 1981 and April 1982.

2 years study already completed at TU Munich-Weihenstephan.

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OR Cl- Aust. Citrus News,
Room 107, 10th Floor,
118 King William St.,
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High-density Citrus Plantings

(Continued from page 9)

In the 1970s a small number of commercial plantings were made at far higher densities — for instance, in the Gosford district. Here soils are generally of low fertility and usually in a replant situation with limited supplementary irrigation available. In these conditions *P. trifoliata* produces a slow-growing, but early cropping tree. A 1973 planting at 4.8m x 1.5m (1,120 trees/ha) produced 32 t/ha in 1979-80 and has a cumulative yield of 72 t/ha since cropping began in 1975-76. By comparison, the Department of Agriculture's crop estimates for the last 3 years (up to 1979-80) show that the average annual yield of Valencia oranges in New South Wales is only 21.6 t/ha.

The trend towards higher planting densities is shown in the Department's 1979 census figures for Valencia oranges in the M.I.A., which is the only district where significant new plantings have been made in recent years. Here the non-bearing areas (under 6 years old) now average 375 trees/ha, compared with only 250 for the older bearing areas.

Citrus growers must now consider even higher planting densities to achieve the desired early yield and more efficient use of resources and to reduce the time from planting to economic break-even point, when returns match the high costs of establishment. With a double planting, this time has been estimated to be 7 years for the M.I.A. and as high as 15 years for coastal districts.

CROPPING EFFICIENCY

Good orchard management and adequate sunlight to all parts of the tree's canopy are essential to achieve maximum yields. As cropping efficiency — weight

of fruit produced per square metre of canopy surface area — is often similar in bearing trees, greater early production and therefore quicker returns from a new planting depend on quickly developing a large canopy surface area per hectare planted.

Planting at higher densities is one way of achieving this. In the longer term, however, production from this type of planting may well be reduced, compared with that from planting at normal densities.

Tree hedging (including topping) and/or thinning when trees start competing for sunlight, or when better access is required, will extend the life of high-density plantings. However, complete orchard removal and replanting may be the most practical and economic management course after, say, 20 years cropping.

Results of Departmental Research

The Department of Agriculture is carrying out research into the effects of planting densities, dwarfing, rootstock, and crop enhancement. Trials are located at the Agricultural Research Centre, Yanco, and the Horticultural Research Stations at Gosford and Dareton. As Valencia orange is the main citrus variety grown in the State, it has been used in many of the trials, although navels, lemons, grapefruit, Ellendales and mid-season oranges have been included in some. Brief results of the main trials follow.

DOUBLE PLANTINGS — DARETON

The trial started in 1960 with Valencia oranges double planted at 7.3m x 3.7m

(373 trees/ha) compared with the normal spacing of 7.3m x 7.3m (188). The object was to establish the effect of thinning and hedging on tree growth and productivity. Highlights of the trial, which is nearing completion (August 1980), are:

- Trees double planted on sweet orange rootstock have yielded 35 per cent more than normally spaced trees.
- Trees double planted on sweet orange and *P. trifoliata* alternatively have yielded 29 per cent more than normally spaced trees.
- Double-planted trees have made more efficient use of fertilizer and irrigation (as applications have been on a per hectare rather than a per tree basis) and have had fewer weed control problems.
- Light to moderate hedging of double-planted trees in 1969, 1973, and 1975 has had little effect on cumulative yields, but severe hedging has significantly reduced yields.
- Hedging effectively controlled tree size, and when carried out in an "on crop" year it reduced the degree of alternate bearing.
- When alternate trees in some double plantings were thinned at 8 years, yields in following years were similar to those from normally planted trees and there were no adverse effects on tree development from the double planting.
- In double plantings where trees were on sweet orange and *P. trifoliata* rootstocks alternately, thinning of the trees on *P. trifoliata* at 17 years resulted in a substantial yield reduction for the following crop (25.1 t/ha compared with 45.1 for normally spaced trees). However, in the second crop after thinning, yields were similar (50.4 t/ha compared with 52.5).
- In double plantings where all trees were on sweet orange rootstock, thinning of alternate trees at 17 years had little effect on the two following crops (the 2-year total was 90.1 t/ha compared with 91.7 for normally spaced trees).

DWARFING BUDLINES — YANCO

Extensive trials have shown that a dwarfing factor can be bud-transmitted to oranges grown on *P. trifoliata* or citrange rootstock. The first high-density dwarfing trial started with Washington navels in 1963 and Valencias in 1964. Plantings with spacings of 5.2m x 2.2m (864 trees/ha) are being compared with normal square plantings of 6.7m x 6.7m (222).

Inoculation with four selected mild dwarfing strains reduced the size and canopy surface area of trees on *P. trifoliata* rootstock by approximately 50 per cent; with severe dwarfing strain tree size was reduced by 80 per cent.



The author inspects dwarf Valencia trees at Yanco.

Plan to Save the Murray

Riverland fruitgrowers and businessmen, concerned at the future of the River Murray, plan to launch a "Save the Murray" campaign.

Work will be co-ordinated through a Save the Murray Committee, which is expected to be officially formed at a meeting at Waikerie on March 30.

A six man steering committee was set up last month to draw up plans for the Committee. Mr. Harry Katekar, of Renmark, is chairman of the Steering Committee and Mr. Rollo Rofe, of Berri, is secretary. Mr. Rofe said recently that SA was reaching a critical situation with its water resources.

"The State depends primarily on the River Murray, and this resource is not being managed effectively," he said.

"The situation is deteriorating rapidly".

Mr. Rofe said the Committee would be looking for a "proper investigation" of problems facing the Murray.

By forming the Committee it was hoped small groups working for the protection of the Murray would gain strength.

"By marshalling all the expertise, political punch and available finance, the committee would strive to ensure adequate usable River Murray water," Mr. Rofe said.

He said it was hoped to establish a full-time executive and secretariat to get the message across.

The committee would aim to represent the widest possible cross-section of the SA community dependent on the Murray for water.

It would also push for renegotiation of the River Murray Water Agreement so the River Murray Commission could perform a co-ordinating and management role on the quality as well as the quantity of water in the Murray system.

Mr. Rofe said there was an urgent need for overall planning and management of the whole Murray-Darling system.

"SA must work to change a system which leads, as at present, to each State seeking to maximise benefits for itself, independently of each other and without adequate regard for the effects of its actions on other States," he said.

"Given the right management and control the present trend in quality deterioration can not only be stopped, but even reversed, so that in future the condition of the system can be better than it has ever been".

Mr. Rofe said unless action was taken now, the problem would continue to get worse.

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Stem-end Rind Breakdown of Washington Navel Oranges

By Dr. B. L. Wild, Officer in Charge, Gosford Horticultural Postharvest Laboratory

The occurrence of Stem-end Rind Breakdown (SERB) of Washington Navel oranges has been particularly bad this last season. This disorder results from the early aging of the rind, making it very susceptible to mechanical injury particularly after harvest. Fruit rind in this susceptible condition collapses under the slightest pressure and within 24 to 48 hours of processing and packing a brownish discoloration develops on the surface. This not only results in a downgrading of fruit but in some situations the breakdown is so severe that it opens up avenues for infection by green or blue moulds (*Penicillium digatum* or *P. italicum*). Rind tissue around the stem-end is generally more susceptible to this pressure however, it can occur on other sections of the fruit.

The exact reason for the increased susceptibility of fruit to mechanical injury is not known, however, research here and in Florida has shown that certain factors are important in regulating its occurrence. Some of these are as follows:

Age of Fruit

The physiological age of the rind appears to be the most important factor in determining the degree of susceptibility of the fruit to SERB. The rind of over-mature fruit is far more susceptible to this problem than fruit picked early in the season. The incidence of the disorder in susceptible fruit can therefore be reduced by harvesting fruit early, however this often means selling on a poor market. Other factors must therefore be considered.

Lemon Rootstock

It is well documented that Navel oranges grown on rough lemon rootstock are more susceptible than fruit grown on other rootstocks. Oranges from these trees should therefore be harvested earlier than fruit on other rootstocks.

Storage Conditions and Time Between Harvest and Packing

The rind of fruit that have been held for two to three days after harvest, before processing, develop a higher incidence of SERB than fruit processed promptly. Research data from Florida show that by delaying treatment for three days after harvest the incidence of SERB was increased from 8% to 53%. It appears that loss of moisture after harvest is the critical factor in determining susceptibility so that by either promptly treating fruit or holding fruit at low temperatures and high humidities after harvest, the incidence of SERB can be reduced. A thorough application of

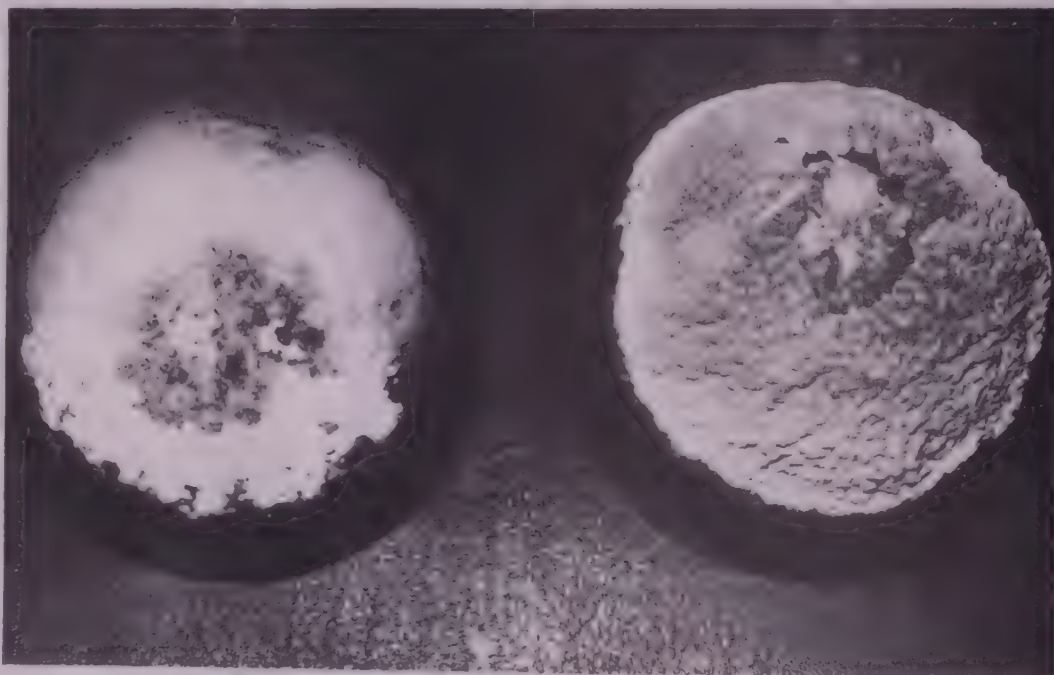
wax to the fruit will also reduce the rate of water loss and therefore help in this regard.

Mineral Nutrition

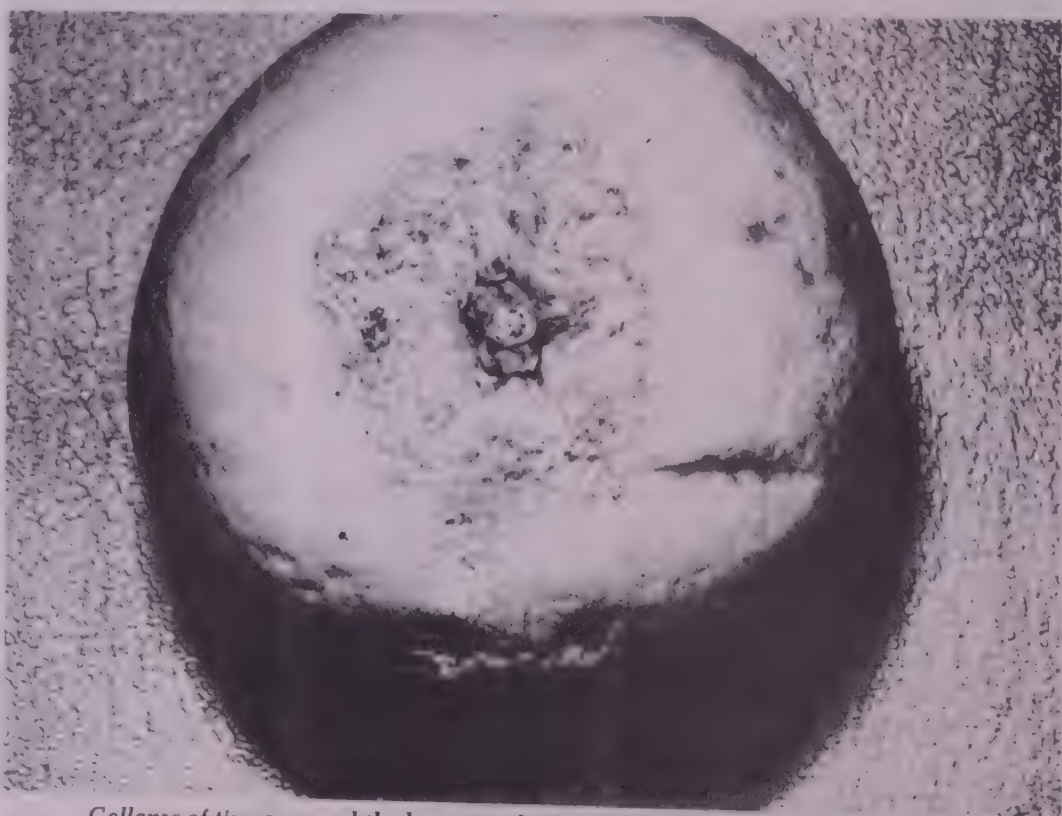
High nitrogen and low potassium nutrition are reported to increase the susceptibility of fruit rind to the mechanical injury that causes this disorder. This therefore emphasises the need to maintain balanced fertilizer

programmes as recommended by the Department of Agriculture for a particular crop and area. The usefulness of additional potassium sprays to possibly reduce SERB will require further investigation to determine if a response is obtained under Australian conditions and to determine if this response is worthwhile.

(Continued on page 13)



The development of green mould infection from the collapsed tissue resulting from Stem-end Rind Breakdown.



Collapse of tissue around the button end of a Washington Navel orange characteristic of Stem-end Rind Breakdown.

Stem-end Rind Breakdown of W. Navels

(Continued from page 12)

Brushing Time

Because susceptible fruit are more prone to mechanical injury than normal fruit, any method by which fruit handling can be minimised will reduce the likelihood of the problem. Ensuring that conveyor belts and rollers are clean, free from grit and not moving too fast will also help alleviate the problem.

Fruit Size and Skin Thickness

Research reports from Florida indicate that SERB is prevalent in smaller fruit and in fruit with thin skins. Smaller fruit are possibly more susceptible because their fruit surface would be in contact with brushes and conveyor belts longer than larger fruit, thus again emphasising the importance of careful handling.

Giberellic Acid

It is well established that pre-harvest sprays of gibberellic acid (5 ppm up to 1 month before harvest) will reduce the rate of rind aging. This subsequent reduction in physiological age of the rind reduces the susceptibility of fruit to SERB. If it is planned to market fruit late it would therefore be good insurance to apply a gibberellic acid spray early in the season.

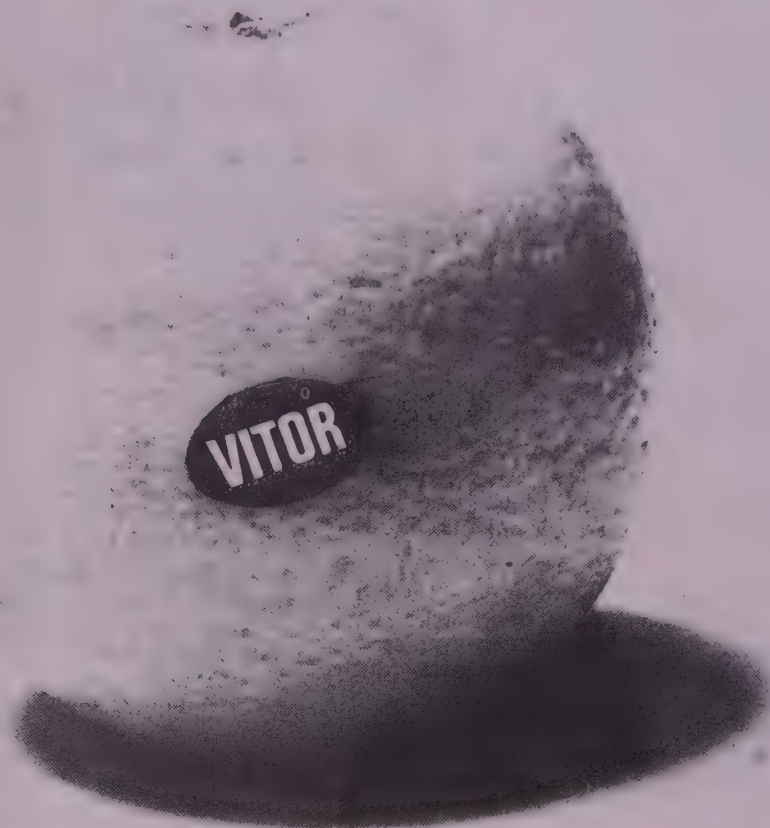
Future Research

It is planned to investigate two different aspects of this disorder. Firstly, in conjunction with Dr. B. Freeman and by using the Scanning Electron Microscope facilities at the Biological and Chemical Research Institute, Rydalmere, it is proposed to study the surface-wax structure of susceptible fruit. This study could reveal what is happening to these fruit at a cellular level and provide some information into causes of the disorder.

The second aspect of research follows research findings in two different areas. Firstly, data available from work in Florida link the incidence of the SERB to potassium and nitrogen nutrition and secondly, research findings on apples and tomatoes now also link calcium metabolism to regulating physiological age of the fruit. It is therefore proposed to study the effects of calcium and potassium tree sprays on the susceptibility of fruit to SERB and compare them with the responses obtained by the standard gibberellic acid. This aspect of the problem will be investigated in conjunction with Dr. C. J. Rigney.

—“Rural Newsletter”
December, 1980.

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High-density Citrus Plantings

(Continued from page 10)

The trees on Troyer or Carrizo citrange were not as dwarfed by the same inoculations, tree size being reduced by about 25 per cent (mild strains) and 50 per cent (severe strain).

Cropping efficiency, tree health and fruit quality (acidity, percentage juice and soluble solids) are similar for inoculated dwarfed trees and uninoculated non-dwarfed trees.

After 16 years the high-density Valencias (Newton strain) on *P. trifoliata* that were inoculated with mild dwarfing strains have significantly outyielded the normally spaced uninoculated trees in both annual and cumulative yields. Table 1 summarizes these results.

In another density trial at Yanco, with Valencias on *P. trifoliata* rootstock, inoculated dwarf (mild strain 3538) and uninoculated non-dwarf trees were planted in 1973 with 25 combinations of row and tree spacing, ranging from 2.0m x 1.0m (5,000 trees/ha) to 5.0m x 3.0m (667).

Table 1. Effect of dwarfing bud inoculations on cumulative yields of Valencia oranges on *P. trifoliata* rootstock, Yanco.

Density (trees/ha)	Dwarfing inoculation	Yield 1964-79 (t/ha)
Normal (222)	Nil	206
High (864)	Severe 033*	185
	Mild 3531*	350
	Mild 3532*	326
	Mild 3538*	334
	Mild 3539	
	Mild 3539*	325

* Accession number.

Cumulative yields per hectare for the first four crops were highest (205 t) for the trees with the closest spacing, and lowest (56 t) for those with the widest spacing. Yield to date is closely associated with early canopy development and planting density. Both dwarf and non-dwarf trees continue to produce similar early yields for the same densities, although cropping efficiency became more variable in 1979, ranging from 2.07

kg/m² canopy (5,000 trees/ha) to 7.22 kg/m² canopy (1,000 trees/ha). The non-dwarf trees are large and where they are most closely planted competition for sunlight is beginning (only 7 years after planting) to affect tree yield.

DWARFING BUDLINES — DISTRICT DEMONSTRATIONS

Five district dwarfing demonstration plantings were commenced in commercial orchards at Leeton, Griffith and Barham in 1973 and 1974. One of the 1973 plantings at Leeton was of Valencia oranges on *P. trifoliata* rootstock, field-inoculated with a mild dwarfing strain, and planted at a spacing of 4.2m x 2.4m (961 trees/ha). Yields to date are:

1976-77	6.4 t/ha
1977-78	15.4 t/ha
1978-79	26.5 t/ha
1979-80	29.2 t/ha

Total..... 77.5

ROOTSTOCK SCREENING — GOSFORD

A long-term screening project, commenced in 1959 and expanded in 1979, is evaluating locally bred, selected, and imported sources of rootstocks as potential new or alternative citrus rootstocks. Some of the screening is aimed at finding a natural dwarfing early cropping rootstock that will be suitable for high-density plantings and reduce the normally long time to break-even point.

CROP ENHANCEMENT — YANCO AND GOSFORD

Trials started in 1974 (Yanco) and 1979 (Gosford) will investigate further the crop enhancement phenomenon observed in previous trials in which increased early production followed inoculation with selected dwarfing and Unshiu buds.

THE FUTURE

Research will continue into methods of producing citrus trees that can be planted at higher densities than are currently used. We need citrus trees that are smaller and that crop earlier and more efficiently. In new trials at Gosford, Yanco, and Dareton a total management approach to high-density plantings will be adopted and the costs of establishment and ways of extending the viability of the plantings will be investigated.

On individual farms, even given the good growing conditions and high level of management required for success with high-density plantings, it is likely that planting densities will ultimately be determined by the cost of nursery trees, and the availability of capital, land and suitable smaller orcharding equipment.

ACKNOWLEDGEMENTS

Many of the trials reported in this article were initiated by the former Citrus Improvement Committee and were carried out over the years by Horticulturists in the Division of Horticulture of the Department of Agriculture. Current results have been supplied by personal communication from Dr. B. Freeman and Messrs. L. Scott, R. Hutton, K. Richens, and K. Bevington.

NOTE: The Department of Agriculture has determined policy guidelines for the commercial use of dwarfing budlines in New South Wales, because the risk factor causing dwarfing and the risk of its being transmitted are unknown (though they are currently under investigation). As the supply of suitable inoculation buds is limited, any commercial citrus grower interested in the technique should contact the nearest District Horticulturist for further information.

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In the 1973 trials at Yanco, Valencias were spaced at densities between 667 and 5,000 trees per hectare and the results compared.

Fresh Citrus Exports

JANUARY SUMMARY

AUSTRALIAN FRESH FRUIT EXPORTS BY STATES (Tonnes)

	Qld	NSW	VIC*	S.A.	W.A.	TOTAL
Grapefruit	1.2	1.3	0.6	0.7	-	3.8
Lemons	4.9	4.5	0.1	0.6	31.1	41.2
Limes						
Mandarins						
Oranges	31.2	17.3	50.0	238.4	1.2	338.1
	37.3	23.1	50.7	239.7	32.3	383.1

AUSTRALIAN FRESH FRUIT EXPORTS BY DESTINATIONS (Tonnes)

	Grapefruit	Lemons	Oranges	Total
PNG & Sol Is.	1.1	4.6	61.5	67.2
Pac. Is.	2.3	3.3	27.0	32.6
Antarctic	0.3	-	0.4	0.7
Singapore	-	28.7	119.3	148.0
Malaysia	-	1.2	64.6	65.8
Philippines	-	1.3	1.2	2.5
Indonesia	-	2.0	51.8	53.8
Hong Kong	-	-	12.3	12.3
UAE	0.1	0.1	-	0.2
	3.8	41.2	338.1	383.1

River Murray Commission Storages, Diversions and Water Supply

FEBRUARY SUMMARY

	Capacity Megalitres	Week End. 25-2-81 Megalitres
STORAGES		
Dartmouth Reservoir	4,000,000	1,676,000
Hume Reservoir	3,038,000	1,101,000
Lake Victoria	680,000	413,000
Menindee Lakes	1,794,000	503,000
Burrinjuck	1,026,000	
Blowering	1,628,000	

WATER FLOWING TO SOUTH AUSTRALIA

Week ending 25-2-81	50,000
Monthly entitlement for February	194,000
Total for February to 25-2-81	173,000
Total for January	217,000

WATER QUALITY

(Average quality for week — total dissolved solids in parts per million)

	25-2-81	27-2-80
Swan Hill	97	124
Euston	121	167
Red Cliffs	146	230
Merbein	175	309
Lock 9	258	354
Lake Victoria	360	294
Berri	N.A.	342
Waikerie	540	450
Mannum	564	468
Murray Bridge	582	456

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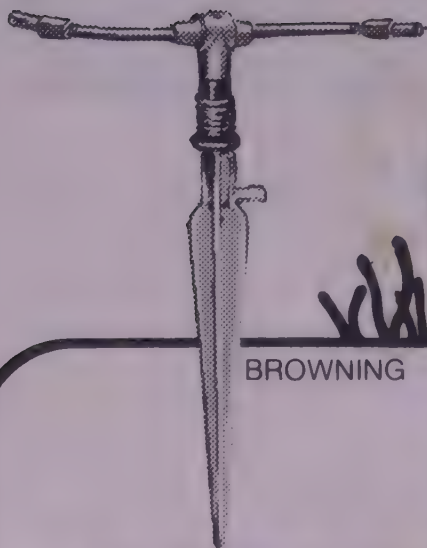
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EDITOR'S NOTE

Citrus growers will be aware that the IAC has been requested to review the operation of the variable tariff arrangement on imports of orange and mandarin juice and to report by 30 June 1982 on any necessary variation to the Assistance arrangements.

It will be essential for the future viability and stability of the industry that the assistance be continued on a long term basis and be adjusted to protect the growers against the effects of inflation.

To achieve this result all sections of the citrus growing industry will need "to get into the same boat" and "pull together on the oars" so that a strong united voice can be presented by ACCF to the IAC and also to Governments and to all Members of Parliament.

(Continued on page 5)

Factory Citrus Prices Increased

The minimum prices determined by the Fruit Industry Sugar Concession Committee for the purposes of the relevant sections of the Sugar Agreement 1979, have been declared for factory purchases of oranges of the 1981/82 season.

Navel oranges have been increased by \$6 per tonne, Valencia oranges by \$7 per tonne and Seville oranges by \$5 per tonne.

Under the terms of the Sugar Agreement not less than the undermentioned prices must be paid for the fresh fruit in question which is used to manufacture fruit products, if domestic or export sugar rebate is claimed:-

Delivered to factory located at—

	Cap. City (Metro.)	81 to 201 km (inclusive) from near. Cap. City	Over 201 km from nearest Cap. City
	per tonne	per tonne	per tonne
Navel Oranges	\$ 97	\$ 93	\$ 89
Valencia and other Seed type Sweet Oranges	\$113	\$109	\$105

Delivered to factory located at —

	Cap. City (Metro.)	Country
	per tonne	per tonne
Seville Oranges	\$109	\$101

The above prices apply to Navel oranges delivered to processors in the period from 1 May, 1981 to 30 April,

1982 both inclusive, and to Seville oranges and Valencia and other Seed type sweet oranges delivered to processors in the period from 1 June, 1981 to 31 May, 1982, both inclusive.

The minimum quality standard to apply to all oranges processed for juice will be on the basis of a minimum soluble solids content of 38 kilograms per tonne of fruit.

MANDARINS.

The Committee gave further consideration to proposals by the growers for minimum prices to be declared for mandarins but again decided against any determination for the 1981/82 season.

GROWER SUBMISSIONS.

Following on the announcement by the FISCC of the prices the President of the Australian Citrus Growers Federation, Mr. Harry Walker of Mildura, said that while there would be some disappointment on the part of growers that the increases granted did not fully offset the increased cash costs of producing citrus, taking all relevant factors into account, the FISCC decisions could be viewed as satisfactory minimum prices.

He said the processors had indicated they would respond to the market situation and it would therefore be hoped that they would pay prices for Navels and

Valencias as least in line with the actual prices paid for the 1980/81 season. If this occurred it would mean that the majority of growers would receive payments for these two varieties in excess of the FISCC minimums.

An ACGF deputation comprising Mr. Walker, Mr. Peter Nicholas (South Australia), Mr. Fred Walpole (Gosford), and Mr. Hugh Cope (ACGF General Secretary) waited on the Committee and presented a strong case for increased minimum prices.

The growers had requested the FISCC to increase the minimum price for Navel oranges by \$10 per tonne to \$93 per tonne (Country factory); Valencias by \$12 per tonne to \$110 per tonne (Country factory); and Seville oranges by \$9 per tonne to \$105 per tonne (Country factory).

Mr. Walker said that a deputation from the Australian Citrus Processors Association had also attended the FISCC meeting. The processors had requested that the FISCC minimum prices remain unchanged for all varieties from those determined last year.

Mr. Walker said that based on the expected tonnages of Navels, Valencias and Sevilles which would be processed in the 1981/82 season, the increases announced by the FISCC in the minimum prices were equal to about \$1.5 million.



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Industry Doings

IAC INQUIRY TO COMMENCE IN JULY.

The Industries Assistance Commission will hold the first of its public hearings into the reference on Orange and Mandarin Juices to deal specifically with the issue of duty evasion.

The Hearing will be held in Sydney on Tuesday 14 July.

Part of the IAC's reference for this Inquiry was that if during the course of the Inquiry, the Commission finds evidence of significant duty evasion under the present assistance arrangements and considers that short term action should be taken to correct the situation pending provision of its report, it provide the Government with an interim report on the matter.

ACGF will be presenting appropriate evidence on this matter on behalf of its member organisations.

* * * *

NSW CITRUS GROWERS COUNCIL ELECTS NEW PRESIDENT.

Mr. Jack Keck of Barham, NSW has been elected President of the NSW Citrus Growers Council for 1981/82.

The retiring President, Mr. Ken Thompson of Griffith has been elected as Secretary and will replace Mr. Fred Walpole of Gosford in this position. Mr. Walpole will continue as Assistant Secretary.

Vice President of the Council is Mr. Ted Burgess of Arcadia, NSW and the fourth member of the Executive Committee will be Mr. Alan Unitt of Gosford.

The Council was re-established in 1980 and represents the combined interests of the NSW member organisations of ACGF at State level.

The new President, Mr. Keck, is a member of the Mid-Murray Citrus Growers organisation and is also Deputy Chairman of the Murray Valley (NSW) Citrus Marketing Board.

MR. WALPOLE TO RETIRE.

Mr. Fred Walpole, Manager/Secretary of the Central Coast Citrus Growers Organisation and the Central Coast (NSW) Citrus Marketing Board has given notice of his intention to retire from those positions at the end of September, 1981.

He and his wife, Gwen, will be leaving the Central Coast to reside at Willunga in South Australia.

* * * *

VICTORIAN CITRUS BOARD AP- POINTS MARKETING EXPERT.

Mr. Jerome Nugent-Smith 35, of Brighton, Victoria, has been appointed to the Citrus Fruit Marketing Board. He takes the place of Mr. Peter Byrne of Mildura, who has resigned.

Mr. Nugent-Smith has a Master of Business Administration degree, from the University of Southern California, a Bachelor of Commerce, with honours in Marketing and Business Administration, and Diploma of Education from the University of Melbourne.

He has had extensive marketing and advertising experience including 3½ years based in Hong Kong working for Sunkist Growers Inc. USA.

Mr. Nugent-Smith, is currently General Manager of Adams Industrial Chemical Company Pty. Ltd. and a Director of Parost Trading Pty. Ltd., and runs his own management consulting business, Nugent-Smith Enterprises.

* * * *

DPI DEPUTY SECRETARY AP- POINTED TO WHEAT BOARD.

The Deputy Secretary of Commonwealth Department of Primary Industry, Mr. Max Moore-Wilton, has been appointed General Manager of the Australian Wheat Board. The appointment is effective as from August 15, 1981.

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GOOD MARKETING IS KEY TO SUCCESS

Rural Committee Chairman Opens Conference

In opening the 33rd Annual Conference of the Australian Citrus Growers Federation at Loxton, the Federal Member for Wakefield and chairman of the Government Parties Rural Committee, Mr. Geoff O'H. Giles said that marketing was the key ingredient of any industry.

He said that the efforts of co-operatives, and in particular private enterprise processors and marketers across Australia had significantly lifted consumption to the great advantage of growers.

He said that good promotion depended largely on a sympathetic consumer reaction, and this fact had "fired" the processing/consumption factor in a real sense.

Mr. Giles quoted the fact that in 1965/66, estimated consumption of citrus per head of population was 19kgs (16 fresh and 3 processed) compared with an estimated 40.6kgs in 1979/80 (14.5 fresh and 26.1 processed).

On the subject of protection, Mr. Giles said the current stability in the industry, coupled with the substantial market growth in citrus juices, was an answer to those Jeremiahs who criticised the Government's action in 1979 in awarding protection to the citrus industry. "In fact that action could not have been more timely, in retrospect as the industry could never have coped with the increase in sales, without the added confidence at grower level, brought about by this action," he said.

Mr. Giles also mentioned the progress in the industry's efforts to gain entry for Australian citrus fruits to the Japanese market and indicated that, due to a number of factors, it was unlikely that approval would be forthcoming in time for the 1981/82 season.

PRESIDENT RE-ELECTED.

The conference re-elected Mr. Harry Walker, of Mildura, as President of the Federation for 1981/82. This will be his second year as President.

Mr. Bob Kemp, of Gosford, and Mr. Peter Nicholas, of Loxton, were also re-elected as Vice Presidents.

Mr. Les Baker, M.B.E., of Gayndah, Queensland was elected as the fourth member of the Executive Committee.

The conference appointed the President (Mr. Walker) and Messrs. Les Baker (Queensland), Peter Webster (MCGCA - S.A.), David Cain (COC - S.A.), Fred Walpole (Central Coast), Ken Thompson (MIA - NSW) and Hugh Cope (ACGF General Secretary) to the Federation's Working Committee with provision for a representative from each of Citrus Management Co. Ltd. (Sunraysia) and the Lemon Marketing Board of NSW to be nominated by those organisations at a later stage.

The President, Mr. Walker, and

Messrs. Baker and Kemp will continue as the ACGF delegates to the Australian Citrus Industry Council and Mr. Walker and the General Secretary will continue as delegates to the Australian Horticultural Growers Council with Mr. Kemp as an alternate delegate.

CONFERENCE SPELLS OUT POLICY ON TARIFF PROTECTION.

One of the major matters discussed at the Conference was the forthcoming inquiry by the Industries Assistance Commission into the operation of the variable tariff arrangement that currently applies to imports of orange and mandarin juices.

The arrangement is due to expire in April, 1982 and the IAC has been requested to review the operation and to inquire and report by 30 June 1982 on whether the existing assistance arrangements should be varied and if so, the nature and extent of any variations.

The conference unanimously agreed that the basis of the growers case to the IAC Inquiry should be to request a continuation of the present arrangement for an extended long-term period.

In making the decision, the conference considered that due to increasing costs of production, over which the growers had little or no control, and the fact that overseas countries (such as Brazil) were on a much lower cost basis than Australia, the level of protection (currently "floor" landed duty paid import price of \$2.40 per kg of total soluble solids) would need to be increased to maintain the citrus industry on a viable basis.

It was also agreed that ACGF would propose that the "Floor" price should be reviewed every two years, and that the Bureau of Agricultural Economics could have the responsibility of advising the Government of the necessary bi-annual adjustments.

The conference confirmed the appointment of a Special Sub-Committee to prepare the evidence for presentation to the Inquiry. The Sub-Committee will comprise the President, Mr. Walker, and Messrs. Les Baker (Queensland), Rollo Rofe (MCGCA - S.A.), David Cain (COC - S.A.), Fred Walpole (Central Coast), John Darnley Naylor (MIA - NSW) and Hugh Cope (ACGF General Secretary).

It was also agreed that with a view to developing a co-ordinated approach by the entire citrus industry on this matter, the Sub-Committee should discuss the ACGF policy with the Australian Citrus

Processors Association, the Australian Fruit Juice Association and with officers of the Commonwealth Department of Primary Industry, the BAE and the State Departments of Agriculture/Primary Industries.

The conference was told that the main Hearing in connection with the Inquiry was likely to take place in November, 1981.

CONFERENCE ACTS TO IMPROVE LEMON JUICE SALES.

The ACGF Annual Conference spent some time discussing the current problems being experienced in the marketing of processed lemon products and in obtaining satisfactory economic returns for lemon growers.

Delegates expressed some concern that this situation had necessitated a reduction of \$7 per tonne in the FISCC minimum prices for factory purchases of lemons in the 1981/82 season and took the view that sales of lemon juice would be dramatically increased if some improvement was made in the palatability and consumer acceptance of the product.

Dr. Bruce Chandler of the CSIRO Division of Food Research told the Conference that the Australian product could be improved if appropriate research was carried out.

Accordingly, the conference agreed to request CSIRO to approve a detailed research project on lemon juice. If approved by CSIRO an approach will then be made to the Commonwealth Government for a Special Research Grant to match industry contributions to cover the cost of the project.

ACGF TO CONVENE FRESH FRUIT MARKETING CONFERENCE.

The Annual Conference expressed alarm at the rapidly increasing costs of packaging and marketing fresh citrus fruits.

Discussion also took place on the need for better co-ordination of the supply of fresh citrus to the Australian market. Reference was made to the lack of adequate information as to likely imports of fresh citrus and the availability of Australian fruit at particular periods of the year.

Resulting from the discussion it was agreed that a national conference should be convened of all sections of the fresh citrus fruit marketing industry to con-

(Continued on page 5)

Good Marketing is Key to Success

(Continued from page 4)

sider the matter, with a view to developing a more unified and better co-ordinated approach to the Australian market.

Delegates expressed the view that if better marketing intelligence could be provided on the markets requirements in the major Eastern State markets, as well as information on the likely available supplies of citrus which would be supplied to the markets each year, then it should be possible to regulate the supplies in a more orderly manner and direct the fruit to the best possible markets. The result could be an improved net return to the growers.

RIGHT: Discussing a poing raised at the Australian Citrus Growers Federation annual conference, at Loxton, are, from left, the vice-president, Mr. Peter Nicholas, of Loxton, Member for Wakefield, Mr. Giles, the federation president, Mr. Harry Walker and secretary, Mr. Hugh Cope.

Highlights of other conference decisions are as follows:-

The conference agreed that the working Committee should continue its negotiations within the industry with a view to obtaining adequate industry support for the establishment of a National Citrus Promotion Authority.

The conference agreed to establish a Special Projects Fund in the accounts of the Federation to provide finance for approved research, promotion or other projects. For the 1981/82 year the contributions by member organisations to the Special Fund will be equal to 7½ per cent of their normal contribution for administration purposes and will be additional to this amount.

A highlight of the Annual Conference Dinner was the presentation of a National 3 in 1 Stereogram to John Darnley Naylor in appreciation for the outstanding service rendered by him to the Australian citrus industry during his three years as President of the Federation from 1977/78 to 1979/80.

The presentation was made by the ACGF President, Mr. Walker and his remarks were supported by Mr. Les Baker.

An arrangement of flowers was also presented to Mrs. Naylor.

The 1983 Annual Conference will be held at Griffith, NSW.



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— INSPECTION WELCOME —

Editor's Note

(Continued from front page)

We've come through the period of the existing arrangements in fairly good shape and the industry is working well as a team. But the biggest test is to come. Let's all make sure that we steer the same course — the correct course to victory

Nitrogenous Fertilizers Subsidy

The Minister for Primary Industry, Mr. Peter Nixon, has announced the Government's decision to refer the question of the future of the nitrogenous fertilizer subsidy to the Industries Assistance Commission.

The IAC has been asked to report to the Government within six months on whether assistance should continue to be provided for the consumption of nitrogenous fertilizers in Australia after December 31, 1981, when current legislation expires; and if so, what the nature, extent and duration of such assistance should be.

Mr. Nixon said the price of nitrogenous fertilizers had risen considerably and he had received a number of requests for a review of the level of the subsidy, which is currently \$20 per tonne of contained nitrogen.

He said rural industries would have the opportunity to make submissions to the Commission during the inquiry, as would other interested parties.

EDITORS NOTE: The IAC Inquiries into the Nitrogenous Fertilizer Subsidy and the Superphosphate Bounty will be held concurrently. It is expected that the Australian Horticultural Growers Council will present evidence on behalf of the horticultural commodity organisations.

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Death of John Medley O.B.E.

A man who played a major role in the development of the Australian citrus industry, Mr. John Medley, O.B.E. died at the Repatriation General Hospital in Adelaide, South Australia on 17 May.

Mr. Medley was 87 at the time of his death.

He began his association with the industry in the early 1930's when he became secretary of the Berri Branch of the Murray Citrus Growers Co-operative Association (the South Australian citrus Grower organisation). In 1934 he was appointed general secretary of the association, with headquarters in Adelaide, a position he held until his retirement in 1966.

He played a major part in the marketing of the South Australian citrus crop in those earlier days and in the successful development of the Riverland brand.

He was chairman of the local Fruit Fly Eradication Committee which led the successful and continuing fight against this pest and also negotiated for appropriate legislation to set up committees in the Riverland area to control the spread of Red Scale.

During the Second World War he was appointed an "Authorised Officer" for South Australia with the task of setting up orange juice processing facilities to supply orange juice to the US troops stationed in Australia and in the Pacific Area at that time.

Mr. Medley, was an SA delegate to the Australian Citrus Growers Federation for many years and was associated with a number of ACGF Committees. He was president of the Federation in 1960/61.

He was always a driving force in developing Australia's exports of fresh citrus fruits and even after his retirement, and almost up to the time of his death, he acted as a consultant to Fruit Distributors Limited of New Zealand as a means of maintaining a close liaison between the Australian citrus industry and the important New Zealand market.

He was a foundation member of the Citrus Organisation Committee of South Australia when that body was

established by the SA Government in 1966.

For his services to the citrus industry, John Medley was awarded the Order of the British Empire (O.B.E.).

Mr. Medley was also very active in community affairs in Berri, South Australia and Adelaide. He was a member of the Rotary Club of Adelaide from 1943 until 1969 and was president of the club in 1955-56.

As a young man of 21 John Medley enlisted in the 1st AIF in World War I and saw his father killed alongside him as they both took part in the ANZAC landing at Gallipoli.



Mr. John Medley

The Australian Citrus News and the Australian Citrus Growers Federation and all citrus growers in Australia pay tribute to the great service rendered by John Medley to the citrus industry.

This tribute was exemplified by the fact that delegates attending the 33rd Annual conference of ACGF at Loxton, South Australia, on 18 May (the day after John's death) stood in silence for one minute at the official opening of the Conference as a mark of respect.

He will always be remembered, not only for his dedication to the citrus industry, but also for his warm friendship, good humour and sound common sense.

Our sympathy is extended to his wife, Mary, and to members of his family.

The funeral service took place at the same church in Adelaide in which he and Mary were married 61 years earlier, on Wednesday, 20 May.

Industry Doings

(Continued from page 3)

GOOD NEWS ON BIOLOGICAL RED SCALE CONTROL.

Citrus growers will be pleased to learn that Ron George of Loxton, and his Biological Services are back in business and that once again, parasitic wasps will

be available to all growers for the biological control of red scale.

Biological Services, after a series of unfortunate mishaps, was almost wiped out and has been struggling for the last 18 months to build up a large population of host scale to ensure an adequate supply of wasps.

AUSTRALIAN CITRUS NEWS

MAY, 1981

Report on Seasonal Conditions — Citrus April 1981

VICTORIA

In Victoria during April weather conditions remained dry and mild. Rainfall figures were below half of the average monthly rainfall in the main fruitgrowing districts.

SUNRAYSIA.

In Sunraysia the harvesting of the 1980/81 Valencia orange crop was almost completed with fruit selling slowly due to poor quality. Present indications are that new season's crops will be light (particularly with Navel oranges) and fruit will mature earlier in some groves. The first new season Navel oranges have been harvested and after gas colouring treatment growers realised good prices (\$8 per carton net) at the Melbourne Market. Early grapefruit similarly treated obtained between \$4.50 and \$7 net per carton. (There has been a buyers' preference for the more palatable fruit from Queensland and Israel). The first Early Imperial mandarins have also been sent to the market where they were sold from \$4 to \$9 a carton, net.

In general tree health appears to have improved following the second growth

flush and milder weather conditions. Growers have been applying stop drop, fungicide and nutritional foliar sprays.

GOULBURN VALLEY.

In the Goulburn Valley, a few Valencia oranges were sent to market, but the majority of the remaining crop will be juiced. An estimated 100 to 200 tonnes of Valencia oranges and 150 tonnes of summer crop lemons are still to be harvested. The new crop of Navel oranges and grapefruit changed colour from dark to light green about the middle of the month. Stop drop sprays have been applied.

NEW SOUTH WALES

Additional rain continues to relieve severe drought conditions in coastal districts, while inland conditions have been dry and mild.

Harvesting of the 1980/81 Valencia crop has been completed except in the late maturing mid Murray district. Maturity of the developing navel crop is generally slightly earlier than normal with harvesting commencing in several districts.

MAITLAND.

Conditions have been fine and mild with useful rain falling in the lower Hunter region. Harvesting of navels and Unshiu mandarins will commence in early May. Tree health has improved following the drought breaking rains.

GOSFORD.

The severe drought has been relieved with a further 188 mm of rain. Second crop valencias are plentiful in the district but there is no ready market available for this fruit. Navels are maturing two weeks earlier than normal and of good fruit size. Main crop lemons are sizing well and of good quality.

WINDSOR.

Some useful rain occurred (137 mm) but follow up falls are still required. Early navels and Imperial mandarins are colouring well and harvesting commenced in late April. Prospects for main crops lemons, late mandarins and valencias are good but further rain is required.

NARROMINE.

Very dry conditions continued and irrigation water shortages are expected

(Continued on page 14)



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ACGF President's Annual Report — 1981

The President of the Australian Citrus Growers Federation, Mr. Harry Walker of Mildura, presented the following report to the 33rd Annual Conference held at Loxton, South Australia on May 18-19, 1981:

Review of the Citrus Industry — 1980/81

INDUSTRY STABILITY:

The basic industry stability, created by the decision of the Commonwealth Government in March, 1979, providing a variable tariff arrangement to protect the industry against unfair import competition on orange and mandarin juices, has been maintained during the year under review.

Although inflationary pressures are evident in all sections of the industry, market growth in orange juice products has been maintained at price levels which have enabled reasonable returns to the industry.

However, the industry still faces a challenge in the achievement of satisfactory economic results from the marketing of processed lemon and grapefruit products and a maximum industry effort is still required to overcome these problems.

Likewise, the industry also faces a challenge in achieving the orderly marketing of fresh citrus fruits on the Australian market at satisfactory price levels, in view of the rapidly increasing growing, packaging, transport and marketing costs involved in this operation. These problems are also very much to the fore in maintaining our fresh fruit exports.

Although the economics of the orange section of the industry are basically, of necessity, geared to the juice component sector, it will continue to be important for the industry to maintain and develop these important fresh fruit marketing outlets.

TARIFF PROTECTION:

Undoubtedly, the most important question of interest to the grower section of the industry during the year under review, has been the fact that the variable tariff arrangement is due to expire in April, 1982, and the importance of these assistance arrangements being continued on a long term basis.

The Government recently announced that the Industries Assistance Commission has been asked by the Commonwealth Government to review the operation of the arrangement and to inquire and report by 30 June, 1982, on whether the existing assistance arrangements on orange and mandarin juices should be varied, and if so the nature and extent of any variation.

It will be essential to the future stability and viability of the Australian citrus industry that this tariff arrangement be continued on a long term basis and that in deciding the level of the "floor" value plus duty paid price of imported orange and mandarin juices —

(currently \$2.40 kg of total soluble solids?) full account is taken of the effect of inflation on the industry's production costs.

The long term basis will be necessary to give the industry security for the future so that further production can be developed on an efficient basis to provide for the expanding Australian market.

The conference will be discussing this matter in detail to enable the Federation to become the focal point of the grower submissions to the IAC Inquiry.



Mr. Harry Walker

SALES TAX EXEMPTION:

Of vital importance to the Australian citrus industry, and complementing the protection given through the variable tariff arrangement on orange and mandarin juices and the specific tariffs on lemon and grapefruit juices, is the exemption from sales tax provided to fruit juices and fruit juice products containing not less than 25% of juices of Australian fruits.

Following on rumours in July of last year that the 1980 Federal Budget would contain a 15% sales tax on flavoured milk and fruit juices, the Federation acted quickly to advise the Government of the importance of this exemption to the citrus industry and requested that in the event of it being true the Government not proceed with the proposed action. History records that the 1980 Budget did not contain such a measure although an announcement was made indicating some tightening up of the sales tax arrangements in respect of flavoured milk.

The industry must remain vigilant on this issue at all times to ensure that, in addition to the level of tariff protection provided on citrus juices, there is a continuing and strong demand for Australian produced fruit juices as against imported fruit juices.

INFLATION — LABOUR COSTS:

The Federation continues to be concerned at the effect of inflation on citrus growers' costs of production and on the ability of the industry to obtain returns commensurate with increasing costs.

The Federation is strongly opposed to the current moves to introduce a 35-hour working week in Australia. The introduction of such a move into the labour intensive citrus and other horticultural industries would place a serious economic burden on these industries, which already have a limited capacity to automatically pass on costs.

WORLD SITUATION:

Although the overall level of inflation in Australia is lower than many of our overseas competing countries, the high cost of our orchard inputs such as labour, fertilizers, chemicals, fuels, transport etc., are resulting in growers' cash costs of production increasing at a rate greater than the rate of inflation. The Federation is therefore concerned at the effect of this situation on our industry's ability to improve our competitive position with overseas producing countries such as Brazil etc.

In 1980 reports indicated that Brazil's rate of inflation had reached 109%. Nevertheless, although the minimum FOB price for Brazilian orange juice concentrate was set by the Brazilian Government in 1979/80 at \$US 900 per tonne (equivalent to a price of about \$A 1.20 per kg of total soluble solids), due to a heavy stock situation, sales were permitted by the Brazilian Government during the later part of 1980 at prices as low as \$US 600 per tonne, (80 cents per kg total soluble solids).

Florida experienced a severe "freeze" early in January this year and this resulted in a loss of about 20% of their orange crop.

When the "freeze" occurred Brazil stopped all export sales and when selling was resumed, the Brazilian Government set the minimum FOB price at \$US 1000 per tonne, which is equal to about \$A 1.33 per kg total soluble solids.

Based on the foregoing information and also the following factors —

- Low labour costs in Brazil; (as of May, 1979 the official minimum wage

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for unskilled workers in Brazil was the equivalent of 32 cents (Australian) per hour compared with the then minimum rate under the Federal Fruitgrowing Award of \$3.32 per hour).

- Production and export assistance provided to the Brazilian citrus industry;
- Indications of exchange rate advantages for Brazil's exporting industries through the apparent operation of a flexible exchange rate system; and
- Increasing costs of producing citrus fruits in Australia, over which the industry has little or no control, even though the industry is considered very efficient by world standards; the Australian citrus industry appears to be in a "Catch 22" situation in effecting any improvement in its competitive position with the Brazilian citrus industry.

RIVER MURRAY:

More than 60 per cent of Australia's citrus production depends on the River Murray System for supplies of irrigation water. The Federation has noted with concern the serious problems which have further developed during the year in regard to increased salinity and a general deterioration in the quality of River Murray water. Because of the extended drought in the Eastern States' catchment areas the problems have now culminated in the river no longer having a flow great enough to permit outlet to the sea in South Australia.

The River Murray is one of Australia's greatest natural resources and the Federation strongly urges the Commonwealth Government and the State Governments of NSW, Victoria and SA to jointly take immediate action to provide the River Murray Commission with complete control over the quality of water in the river in addition to its existing control over quantity.

Unless this action is taken urgently the future of the River Murray as an effective irrigation system could well be in jeopardy.

NEED FOR UNITY AND TEAMWORK:

The overall challenges that face the citrus industry will only be successfully overcome if the industry is united in its approach and in its effort to achieve the desired results.

I appeal to all sections of the citrus growing industry to adopt a positive, constructive approach to industry matters so that we can all "pull together" in our efforts to improve the well-being of the industry.

AUSTRALIAN CITRUS INDUSTRY COUNCIL

I am pleased to report that in respect to the question of teamwork between the various sections of the citrus industry, good progress has been made in this direction through the establishment last year of the Australian Citrus Industry Council.

This council, comprising representatives from the Federation, the Australian Citrus Processors Association and the Australian Fruit Juice Association, has already developed an improved degree of trust and co-operation within the overall industry and this augurs well for the future.

Important areas where the council is already active are in improving industry statistics; standards for fruit juices and fruit juice drinks; powdered vitamin C supplements; and market research and promotion of Australian citrus juices.

The Federation looks forward to working with the other sections of the industry to further develop the Council as the national forum and action group for the entire Australian citrus industry.

The 1980/81 Season

PRODUCTION:

Throughout most of 1980, citrus growing districts experienced continued dry conditions, particularly in the NSW coastal areas, and this culminated in another very hot and dry summer.

However, although the trees were under some stress at various times of the year, the 1980-81 season has produced record crops of all citrus varieties, which in all cases are in excess of original forecasts.

Of major impact on the results was the valencia crop which exceeded the 1980-81 industry forecasts by 27,000 tonnes, including an increase of 22,000 tonnes in SA. Navel oranges yielded a crop 8,000 tonnes in excess of industry forecasts.

Total estimated citrus production in the 1980-81 season was a record 550.1 kilotonnes, being 63.5 kilotonnes, or 13 per cent, above the previous season's production.

Record crops for all citrus varieties contributed to this result.

Provisional estimates indicate that 432.9 kilotonnes of oranges were harvested in the 1980-81 season, representing an increase of 40.9 kilotonnes, or 10.4 per cent, over the 1979-80 crop. The orange crop comprised 167.8 kilotonnes of navel oranges, 260.7 kilotonnes of valencia oranges and 4.4 kilotonnes of other orange varieties.

The valencia crop was 11.9 kilotonnes, or 4.8 per cent, above the previous highest crop recorded in 1979/80, and the navel crop was 30 kilotonnes, or 21.8 per cent, above the previous year which was also the previous best.

The 1980-81 lemon crop also appears to have created a record, being estimated at 50.6 kilotonnes. This figure is 11.2 kilotonnes, or 28 per cent, above the official crop statistics recorded for 1979-80.

The increased production in 1980-81 resulted mainly from increased lemon production in the Murrumbidgee Irrigation Area, in the Sunraysia/Mid Murray regions and in SA.

Mandarin production was also a record, with an estimated crop of 35.6

kilotonnes, 7.9 kilotonnes (or 28.5 per cent) above the previous year and 3.3 kilotonnes greater than the previous record achieved in 1978-79.

Estimated production of grapefruit was 30.9 kilotonnes, 3.5 kilotonnes (or 12.7 per cent) up on the 1979-80 crop which was the previous best.

CROP DISTRIBUTION

An estimated record 262.5 kilotonnes of oranges have been delivered to factories during the 1980-81 season. This tonnage represents 60 per cent of the total orange crop and is 43.5 kilotonnes (20%) greater than the previous highest processed tonnage of oranges which was recorded last year.

Of the total processing tonnage, navels accounted for 84.1 kilotonnes (50 per cent of the navel crop and 32 per cent of the total oranges processed), and valencias 176.1 kilotonnes, (67.5 per cent of the valencia crop and 67 per cent of the total oranges processed).

Other oranges, such as sevilles and commons, made up the balance of the orange processing tonnage with 2.3 kilotonnes going to factories and the remaining 2.1 kilotonnes of these varieties going to the domestic fresh fruit market.

Factory deliveries of lemons in 1980-81 have been estimated at 37.5 kilotonnes, also a record figure, and 14.2 kilotonnes above the estimated processed tonnage in the previous year.

The estimated factory intake of grapefruit was 22 kilotonnes, another record, and 5.5 kilotonnes above the level recorded for 1979-80.

Mandarin processing also increased from the customary 1 kilotonne up to 3.8 kilotonnes, indicating some improved interest in this variety by factories.

Total factory intake of citrus fruits in the 1980-81 season is estimated at 325.8 kilotonnes. This figure represents 60 per cent of the total citrus crop and is 66 kilotonnes, or 25 per cent higher than the previous highest processing tonnage recorded in 1979-80.

During the 1980-81 season an estimated 34.5 kilotonnes of fresh citrus fruits were exported, representing 6.26 per cent of the crop. The export tonnage was 11.1 kilotonnes below the record exports of 1979-80 when a total of 45.6 kilotonnes were exported.

Supplies to the domestic fresh fruit market totalled 189.8 kilotonnes, comprising 145.7 kilotonnes of oranges, 24.1 kilotonnes of mandarins, 11.9 kilotonnes of lemons and 8.1 kilotonnes of grapefruit.

The total estimated supplies to the fresh market represent slight increases for oranges, mandarins and lemons over the previous year and a small reduction in respect to grapefruit.

However, the deliveries to this market are still below the levels of previous years, and, having in mind the record

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crop, appear to maintain a gradual decline in fresh consumption per head of population.

Processed Citrus Products

IMPORTS — CITRUS JUICES:

Imports of citrus juices cleared for home consumption during the year ended 30 June, 1980, amounted to 54.8 million litres. These import clearances were the highest on record, being over 40 million litres more than the clearances in 1978-79 and 17 million litres above the previous record figure in the problem year of 1975-76. The 1979-80 clearances were equal to an estimated 121,000 tonnes of fresh fruit.

The 1979-80 import clearances comprised 54 million litres of orange juice, 13,000 litres of mandarin juice, 39,000 litres of lemon juice, 96,000 litres of grapefruit juice, 609,000 litres of lime juice and 9,000 litres of other citrus juices.

Reliable statistics are not yet available on import clearances of citrus juices to date in the 1980-81 year but present indications are that orange juice clearances up to March 31, 1981, were considerably less than for the corresponding period of 1979-80. In this nine month period orange juice clearances appeared to be the equivalent of 55,000 tonnes of fresh fruit (86,000 tonnes to March, 1980), lemon juice clearances the equivalent of 180 tonnes (67 tonnes to March, 1980) and grapefruit clearances 8 tonnes (281 tonnes to March, 1980).

The Federation welcomed the decision by the Federal Treasurer, in June 1980, to change the unit of quantity for statistical purposes for all imports of citrus juices to kilograms of Total Soluble Solids (TSS) as from July 1. This decision was in response to a request by the Federation aimed at simplifying the import statistics and was supported by other sections of the industry.

The lack of reliable information on import clearances of citrus juices in the nine months to March 1981 appears to be associated with the change-over from single strength litres to TSS; the constant difficulty in producing reliable preliminary estimates of overseas trade statistics; and some apparent anomalies in the variable tariff arrangements on orange and mandarin juices which could be affecting the volumes and values as recorded in the statistics and could also be resulting in some avoidance of duty.

The variable tariff arrangement was reviewed by the Minister for Business and Consumer Affairs during 1980, in accordance with a decision of the Government when the arrangement was introduced in April 1979 to review the arrangement after 12 months, and the Federation made strong representations

at the time to the Minister to retain the variable tariff system; and to explore all possible means of ensuring that the arrangement operated correctly and that the Government collected the proper amount of duty.

The Federation welcomed the announcement by the Minister, Mr. Moore, in November last year that the review had shown the arrangement was providing an adequate level of assistance for the industry. The announcement also indicated that any unfavourable developments in the conditions affecting the industry locally or overseas could threaten the effectiveness of the tariff arrangement in assisting the citrus industry and the Minister undertook to continue to monitor its operation.

As mentioned earlier in this report, the IAC has now been asked to carry out the review scheduled after three years of operation of the arrangement and this inquiry will also be looking into the matter of any significant duty avoidance under the arrangement. It will also be hoped that the inquiry will investigate any anomalies which may be evident in the import statistics.

It is the view of the Federation, as expressed in the request to the Federal Treasurer for the statistics to be recorded in kilograms TSS, that citrus juices being imported into Australia should carry information on the drums, or other such containers, of the contents of the container in kilograms TSS instead of the weight and Brix as apparently applies at the present time.

THE AUSTRALIAN JUICE MARKET:

The level of orange juice imports, complementing the estimated record Australian crop in 1980-81, indicates that the market growth for orange juice and orange fruit drink is being maintained at a strong level.

This growth is being assisted by brand image promotion at the consumer level and, while retail prices have moved gradually upwards to offset increased industry costs, the pricing of the products is still very competitive with other competing beverages.

Unfortunately, problems still exist in achieving a greater consumer offtake of lemon juice and grapefruit juice products.

In recent years the tonnage of lemons being processed appears to have exceeded the market demand for lemon juice products and has resulted in a relatively depressed market situation.

In view of the universal uses of lemon juice and its potential as a thirst quenching product there appears to be a need for greater industry promotional activity of these products to establish a stronger image at consumer level.

A similar story exists in respect to grapefruit juice products and the Federation will continue to seek greater industry activity on both lemon and grapefruit juice products in the future.

IMPORTS OF CITRUS OILS:

The Federation recognises the importance of citrus oil production as an essential by-product in the citrus processing industry and welcomes the decision by many of the Australian citrus processors to install the necessary equipment for the extraction of oil.

Depending on the world market situation the price of lemon oil can be the equivalent of between \$30 and \$50 per tonne of fresh fruit.

Import clearances of citrus oils in the year ending June 1980 amounted to 82,414 kilograms at an average value for duty of \$21.72 per kilogram. Of this total, lemon oil clearances were 30,000 kilograms at an average value of \$32.73 per kilogram, and orange oil clearances were 31,280 kilograms at an average value of \$9.16 per kilogram.

Import clearances for the nine months ended March 1981 were 25,000 kilograms of lemon oil (average value \$12.25 per kg) and 22,000 kgs orange oil (average value \$7.03 per kg).

The Federation noted the decision announced by the Commonwealth Government in September last year that a general tariff rate of 10 per cent would apply to imports of all citrus oils and that imports from developing countries and New Zealand would be at minimum rates.

The decision meant a reduction in the general tariff rate on lemon and orange oil from 15 per cent down to 10 per cent; an increase on other citrus oils from 7½ per cent up to 10 per cent; and a reduction in the developing country tariff on lemon and orange oil from 5 per cent down to minimum rates.

Although the general tariff rate on lemon and orange oil was reduced, of vital importance in the decision was that Brazil, a country classified under the general agreement on tariffs and trade as a developing country, would be excluded from the developing country preference on orange oil and imports from that country would be subject to a 10 per cent tariff.

The federation made strong representations to the Commonwealth Government seeking the exclusion of Brazil from this preference in view of that country's position as the world's second largest citrus producing nation.

Undoubtedly the Government's decision has helped to encourage citrus processors to further develop their oil extraction activities.

EXPORTS — PROCESSED CITRUS PRODUCTS:

Exports of citrus juices in 1979-80 totalled 5.3 million litres, comprising 2.6 million litres of orange juice, 1.5 million litres of grapefruit juice, 485,000 litres of lemon juice and 706,000 litres of other citrus juices. Total value of these products was \$2.8 million. The exports represented

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an increase of 1 million litres over the previous year.

During the nine months to 31 March, 1981, exports of citrus juices have totalled 3.9 million litres, comprising 2.5 million litres of orange juice, 66,000 litres of grapefruit juice, 1.1 million litres of lemon juice and 285,000 litres of other citrus juices. Value of the 1980-81 exports to date is \$1.9 million.

Exports of citrus oils are being maintained at the average levels of recent years. In 1979-80 a total of 88,000 kilograms were exported with the value slightly up on the previous year. In the nine months to March 1981, 62,000 kilograms have been exported and at values substantially increased on the 1979-80 levels.

Marketing — Factory

FRUIT INDUSTRY SUGAR CONCESSION COMMITTEE:

In determining minimum prices to apply to factory purchases of citrus fruits in the 1980-81 season, the Fruit Industry Sugar Concession Committee increased the price of navels by \$7 per tonne, valencias by \$8 per tonne, seville oranges by \$6, lemons by \$5 per tonne and again left the price for grapefruit unchanged.

The Federation made representations to the committee seeking appropriate increases for all citrus varieties which took into account the growers' increased costs of production and the general supply/demand situation of each variety.

The submission in respect to lemons again sought the elimination of the price differential between metropolitan and country factories but the committee maintained the differential arrangement for this and all other citrus varieties.

The decision to leave the minimum price for grapefruit unchanged again met with considerable disappointment from the growers, this price having not been altered since 1975-76.

The Federation again submitted a request to FISCC for minimum prices to be set for factory deliveries of mandarins but the committee again decided against any determination.

Following on the announcement of the FISCC minimum prices for navel and valencia oranges, the Federation recommended to the State and regional statutory citrus authorities that the minimum prices for these varieties should be increased to levels more in line with the prices expected to be paid by processors. The recommendation for navels was a further increase of \$6 per tonne as from July 14, 1980 and for

valencias a further increase of \$7 for the period from October 13, 1980, to January 30, 1981.

The boards in New South Wales and Victoria responded favourably to the recommendations and increased the minimum prices in their respective areas and for specified periods of the season.

The Federation is aware that there has been some criticism on the part of processors of the action taken by the boards in increasing the minimum prices. However, any recommendations by ACGF to the boards in respect to minimum prices have usually only been taken after discussions between ACGF and representatives of the Processors Association and also between ACGF and the boards.

It is important to realise that the FISCC is not a price fixing authority. Its responsibility is only to determine a minimum price for those fruits for which it chooses to determine a price, for the purpose of the payment of Domestic Sugar Rebates under the Commonwealth/Queensland Sugar Agreement.

The FISCC itself recognises that fact that the price is a "minimum" price and that if there is anything extra to be obtained from the market place it is up to the industry to adjust the price. On those occasions when the Boards have in-

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creased the minimum prices above the FISCC determinations there have been clear indications that the market was able to, and intended to, pay prices considerably higher than the FISCC minimums. What the boards have done has been aimed at indicating the price level which the growers considered was appropriate for the optimum periods of particular seasons and has also been aimed at maintaining some level of uniformity in the factory prices being paid in the major citrus growing areas.

The action taken by the boards in no way cuts against or interferes with the important role of the FISCC in these matters.

In the 1980-81 season the expected strong demand by processors for oranges was maintained and prices paid for navels and valencias in NSW, Victoria and SA even rose above the levels determined by the boards for the optimum seasonal periods.

The Federation has welcomed the FISCC decision to amend as from January 1, 1981, Clause 17 of the Prescribed Conditions applicable to Domestic Sugar Rebate payments in respect to citrus and soft fruits by increasing the minimum first payment due not later than the end of the month following the month of delivery from 40 per cent up to 50 per cent. The decision provided for the minimum second payment due not later than the end of three months following the month of delivery to remain at 20 per cent, and for the final payment due not later than six

months following the month of delivery to be 30 per cent instead of 40 per cent.

Although the majority of processors are currently paying for factory oranges in payment terms greatly better than the minimum FISCC terms, ACGF has for sometime sought to improve the Clause 17 arrangements, in line with its policy, due to the increased financial pressures being experienced in the orchard operations.

The FISCC decision to amend the clause as from January this year followed on a submission to the committee seeking a gradual improvement in the payment terms.

In response to a proposal by the Australian Citrus Processors Association that the FISCC minimum price determinations for 1981-82 season lemons and grapefruit should be made in March, navels should be in May and valencias and other citrus varieties in August, the Federation agreed to support the setting of lemon and grapefruit prices in March, but considered that the determination of prices for all other citrus varieties needed to be dealt with at the one meeting, preferably late May or early June.

Accordingly, the FISCC agreed to the ACGF approach and programmed its minimum citrus price determinations for the 1981-82 season on that basis.

The Federation acknowledged the difficult task which faces the FISCC member representing the growers of non-canning fruits, and our own member, Michael Keenan, in endeavouring to achieve minimum price determination for citrus fruits which are always satisfactory to the growers. It is therefore appropriate that appreciation is conveyed to him for his work in this field and for his efforts on behalf of the growers.

FRESH FRUIT MARKETING — DOMESTIC MARKET:

Although the 1980-81 season has seen a strong demand for fruit by the processing sector, a reduced volume of fresh fruit exports compared with the previous season, coupled with a record crop, resulted in fresh fruit supplies to the domestic market being slightly up on the 1979-80 figures.

Estimated deliveries to the fresh fruit market totalled 189.8 kilotonnes compared with 181.2 kilotonnes the previous year.

Generally speaking, the growers' returns from the domestic fresh fruit market in 1980-81 have not kept pace with the rapidly increasing costs and in most cases a net decline in return levels has resulted. In many instances increased gross prices have been achieved but the escalation of packaging, transport and marketing costs have resulted in lower net returns for the grower.

This is a problem to which the industry will need to direct more attention in the years ahead. The situation would be assisted if the industry was able to achieve its policy of having citrus fruits

sold in Australia by weight at the wholesale and retail levels instead of by count.

Some progress is being made on this matter in some of the States but a concerted effort is required at State level to implement the change as quickly as possible.

Imports of fresh citrus fruits cleared for home consumption in the twelve months ended June 30, 1980, totalled 682 tonnes, compared with 644 tonnes in the previous year.

The clearances included 349 tonnes of grapefruit, 175 tonnes of lemons and limes, 88 tonnes of oranges, 38 tonnes of mandarins and 32 tonnes of other citrus fruits.

For the nine month period to March, 1981, the record clearances amounted to 1,062 tonnes and comprised 387 tonnes of grapefruit, 371 tonnes of oranges, 150 tonnes of lemons and limes, 87 tonnes of mandarins and 67 tonnes of other citrus fruits.

The import of Californian navels for sale on Eastern States markets in the March-April period this year created some marketing problems for Australian late season valencias which had been held back by growers, and particularly for the Mid-Murray district which traditionally markets good quality valencias at that time of the year.

The fact that the Californian fruit was selling for \$14 per box and about 20 cents per orange at the retail level highlights the fact that high prices can be obtained from the consumer market and the incentive must be there for the Australian industry to improve its returns from this market. It is obvious that the Californian fruit was sold on a cost plus basis whereas the Australian fruit is usually sold on a price minus basis.

The exercise also points to the need for the Australian industry to develop better information on fruit availability; on expected import quantities; and on the market's requirements so that the marketing of fresh citrus throughout a year can be planned on a more orderly basis.

Further work has been carried out during the year by the NSW Department of Agriculture on the matter of grapefruit maturity standards and it is expected that progress will be reported to the conference.

The Federation is taking an increased interest in the use of plastic returnable containers in view of the potential cost savings which could accrue from their use. This matter will also be further reported on at the conference.

FRESH FRUIT MARKETING — EXPORT

Exports of fresh citrus during the calendar year 1980 totalled 34.5 kilotonnes, this figure being 10.5 kilotonnes, or 23% less than the record exports achieved in 1979.

The reduction can be attributed to the availability of increased supplies of citrus

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from California and the end result was in line with forecasts.

The 1980 exports comprised 24,684 tonnes of oranges, 1,274 tonnes of lemons (down 3,645 tonnes from the 1979 record shipments of 4,919 tonnes), 7,708 tonnes of mandarins and 812 tonnes of grapefruit.

South Australia provided 58% of the total exports with 20,057 tonnes followed by Queensland with 10,640 tonnes (31%).

The most important market was again New Zealand, taking 24% of the exports. Next came Singapore 19%, Malaysia 10%, Holland 8% and Saudi Arabia 7%.

The Federation has followed closely the progress being made in achieving entry for our citrus fruits into the important Japanese market.

The industry was represented at important talks with the Japanese authorities in Tokyo last December to consider the practical arrangements for meeting Japan's fruit fly treatment requirements on Australian citrus fruits. The finalisation of these arrangements will enable the Japanese to complete the drafting of the necessary regulations under which the quarantine ban on Australian oranges could be lifted and these regulations will then form the basis of a recommendation to a Japanese Public Hearing on the matter.

The federation has particularly welcomed the more recent information that the Japanese have now also accepted the necessary quarantine data in respect to lemons which means that if approval is given for the entry of oranges, similar approval for lemons could be expected very soon after that time.

Of some concern to the federation in the matter is the provisional ruling by the U.S. Environment Protection Authority that Ethylene dibromide (EDB), the fumigant being used in the fruit fly treatment programme, should be banned as a fumigant for fresh fruit in the USA from July 1, 1983. As a result of this action the Japanese have deferred an on-site inspection in respect to lemons until the EDB control issue in the USA is resolved and until matters outstanding from the discussions on oranges are settled.

If EDB is banned as a fumigant it will create serious problems for our export industry and in regard to any potential opening up of the Japanese market, we will be very much back to square one. Developments in the USA will therefore be watched very closely over the next few months.

RESEARCH:

During the year under review the federation has sponsored a further year's work by the CSIRO Division of Food Research on ways and means of improving the palatability and consumer appeal of Australian grapefruit juice.

The project has been carried out by Dr. Bruce Chandler and, following on the encouraging interim results made available after the first year's programme, there are high expectations of favourable results which will be of lasting benefit to the industry.

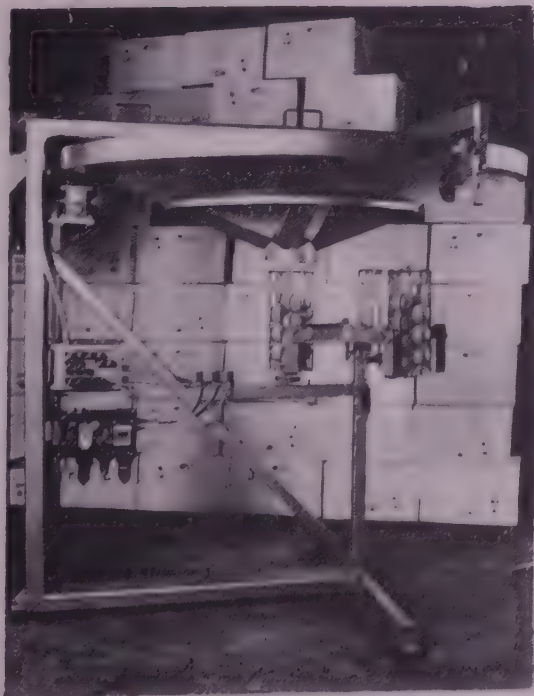
The total industry funds required for the 1980-81 project were \$8,000 and this was contributed by COC \$2,500; Citrus Management Co. Ltd. \$2,500; Leeton Citrus Growers Association \$750; Mirrool Citrus Growers Association \$750; Australian Citrus Processors Association \$1,000; and Berri Fruit Juices Co-operative Ltd. \$400. The Commonwealth Government provided a matching Special Research Grant to make up the total funds required.

During the year the Federation approached the CSIRO Division of Food Research concerning a possible research project on lemon juice and lemon juice products similar to the grapefruit project. There is an obvious need to improve the consumer appeal for these products and further consideration will be given to a possible research project on this subject during the conference.

Although the Federation has so far been unsuccessful in obtaining adequate industry support for the proposal discussed at the 1980 conference to establish an Australian citrus research

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DDM FRUIT HANDLING EQUIPMENT INTRODUCES RADICAL NEW ORANGE PACKER (Patented)



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authority, the State member organisations are continuing to financially support particular research projects from time to time:

PROMOTION:

The year under review has seen the further development of the Good Nutrition Education Project being undertaken by the Australian Council of Good nutrition, of which ACGF is a contributing member.

Total contributions by member organisations are now \$6,000, following an additional \$1,000 provided during 1980 to provide for increased printing and distribution costs for the "Good Food Friends" teaching aid kit.

It is understood that some 1,200 kits have now been sold to schools and have been received favourably by both teachers and children.

During the year the Federation also financed the inclusion of the "Good Food Friends" character, "Jolly Orange" in an alphabet series in the "Australian Women's Weekly". The response to this is understood to have been very favourable and provided valuable publicity for the overall project.

SWAN REACH

IRRIGATED CITRUS ORCHARD

23.24ha (57.42 acres) including 2.42ha apples, balance citrus, of which 4.86ha is installed with under-tree sprinklers, 16.2ha with overhead permanents.

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As is the case with research, State Member Organizations are becoming increasingly involved with promotion projects, mainly concerned with the marketing of fresh citrus.

However, there is still a need for promotional activity of a national nature such as consumer education about citrus fruits and citrus juices; industry project material for school children; and recipe promotion etc. Because of this it will be hoped that the Conference may be able to make progress in obtaining greater industry support for the proposals, also considered at the 1980 Conference, for the establishment of a National Citrus Promotion Authority.

PROSPECTS FOR 1981-82 SEASON:

Present indications are that the overall Australian citrus crop for the 1981-82 season will be down from the record production of 1980-81.

The heatwave conditions experienced by most districts during the past summer resulted in excessive shedding of fruitlets, particularly navels, and preliminary forecasts for the 1981-82 season indicate that crops of all citrus varieties will be below the levels of last year.

Some rain has fallen in some of the districts during the early part of 1981 but further falls are urgently needed in these areas and in the irrigation catchment areas.

The navel orange crop is currently forecast to be 31% below the record 1980-81 crop, and is expected to yield 115.7 kilotonnes. Accordingly fruit will be on the large side and this could present problems in supplying the market's requirements.

The valencia crop is forecast to be less than 3% below the record crop of 1980-81 so that, to all intents and purposes, it will be a similar crop. The tonnage forecast will be 253.5 kilotonnes com-

pared with 260.7 kilotonnes last year. The crop is down in the Sunraysia, Mid-Murray districts but up slightly in NSW and SA.

Lower crops are also forecast for all other varieties. Lemons are expected to be down by 8 kilotonnes (16%); mandarins down by 6.6 kilotonnes (18%); and grapefruit down by 2.6 kilotonnes (8.5%).

Total citrus crop estimates are for a production of 473.8 kilotonnes, a reduction of 76.2 kilotonnes (13.8%) from the record production of 1980-81.

Details of preliminary forecasts provided by State Departments of Agriculture and ACGF member organisations for the 1981-82 season are: (1980-81 provisional figures are in brackets).

	Tonnes	
Navel oranges	115,735	(167,759)
Valencia oranges	253,551	(260,734)
Other oranges	4,729	(4,420)
<hr/>		
Total oranges	374,015	(432,913)
Lemons	42,511	(50,648)
Mandarins	29,065	(35,635)
Grapefruit	28,245	(30,896)
<hr/>		
Total all citrus	473,836	(550,093)

The outlook for 1981-82 season again looks promising for oranges and mandarins but marketing prospects for lemons and grapefruit are still subject to problems.

A continued strong demand is expected for oranges for processing and with the light crop of navels this reduces the pressure on this variety which existed last year. The processing demand will be concentrated on the valencias and there could be problems in processing capacity during the optimum juice and solids yield period of the harvest. Because of the con-

(Continued on page 15)

Report on Seasonal Conditions

(Continued from page 7)

next season. Citrus trees are in good health. Navel fruit size is normal and as colour development is not advanced harvesting will only commence in May. Spraying for red scale continued with good results.

MIA.

Mild and dry conditions prevail which resulted in a false navel blossom. Small quantities of Valencia will be harvested until early May.

Harvesting of the navel crop is expected to commence in May with samples passing the maturity test since the 24 April. Fruit size is medium to large due to the lighter crop. Spraying for red scale continued particularly in areas where parasites have been released.

MID MURRAY.

Dry and warm conditions have

resulted in the need for continuing irrigations. Late Valencia will continue to be harvested until the end of May but they remain difficult to sell with low expected prices for both fresh and processed fruit.

LOWER MURRAY.

Dry warm to mild conditions continued. Harvesting of Valencias was completed with late fruit of poor quality resulting in reduced market prices. The navel crop is expected to be 30 per cent below normal. Harvesting of Leng and Thompson navels commenced 14 days earlier than normal in mid April.

Market prices for these early harvested fruit has been very good — \$10 per citrus package. Lemon and mandarin crops are also light but the seasonal conditions have resulted in lemon trees blossoming and a light small crop has been set.

ACGF President's Report

(Continued from page 14)

tinued market growth in orange juice and orange juice products (reported to be about 15% per year) imports of orange

Super. Bounty

The Minister for Primary Industry, Mr. Peter Nixon has announced the Government decision to refer the question of the future of the super-phosphate bounty to the Industries Assistance Commission.

Mr. Nixon said legislation under which the bounty was currently paid expired on 30 June 1982 and the Government would be in a better position as a result of the IAC inquiry to make a decision on the future of the bounty after that date.

Mr. Nixon said the price of super-phosphate had risen considerably since July 1977, when the bounty rate was set at \$12 per tonne, and he had received a number of requests for a review of the level of the bounty.

The IAC would carry out a full public inquiry and would report to the Government within twelve months on whether assistance should continue to be provided for the consumption of phosphatic fertilizers in Australia after June 1982 and if so, what the nature, extent and duration of such assistance should be. Rural industries would have every opportunity to make submissions to the Commission during the inquiry, as would other interested parties.

Although it is generally acknowledged that rural industries receive limited direct assistance from the Government, nevertheless, it is important that the superphosphate bounty should be subject to public scrutiny by the IAC in the same way as assistance for other industries, Mr. Nixon said.

juice are expected to be maintained at relatively high levels.

Prospects for fresh citrus exports appear to be similar to last year and the industry should expect to be able to again supply approximately 35 to 37,000 tonnes of citrus fruits to overseas markets.

AUSTRALIAN HORTICULTURAL GROWERS COUNCIL:

The Federation has continued to play an active role in the affairs of the Australian Horticultural Growers Council (AHGC).

Major matters which have received attention during the year include:

- Negotiations for a closer economic relationship with New Zealand.
- The proposed plant variety rights legislation.
- The establishment of a general horticultural panel to monitor trade and protect the interests of soft fruits and tropical fruits.
- The presentation to governments of an energy policy for horticulture.
- IAC Inquiry into fruit and fruit products (excepting citrus).
- Depreciation allowances on farm water storages and reticulation systems.
- Concessional postage rates for rural publications.
- Tax deductions for seasonal harvest employees.
- Action concerning rumours re possible sales tax on wine.
- Action to ensure continuance of sales tax exemptions on fruit juices and fruit juice products.

The Council holds regular meetings with the Government Parties Rural Committee which are of major importance to all horticultural commodity organizations.

The Council participates in the affairs of the National Farmers Federation (NFF) as an associate member and is currently represented at that level by our general secretary, in his capacity as president of the council.

— HARRY E. WALKER, President

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Fresh Citrus Exports

FEBRUARY SUMMARY

AUSTRALIAN FRESH FRUIT EXPORTS BY STATES (TONNES)

	QLD.	NSW	VIC.	S.A.	W.A.	TOTAL
Grapefruit	2.0	0.5	0.7	—	0.1	3.3
Lemons	3.5	2.8	0.3	—	21.5	28.1
Oranges	32.4	57.0	46.5	26.5	—	162.4
	37.9	60.3	47.5	26.5	21.6	193.8

AUSTRALIAN FRESH FRUIT EXPORTS BY DESTINATIONS (TONNES)

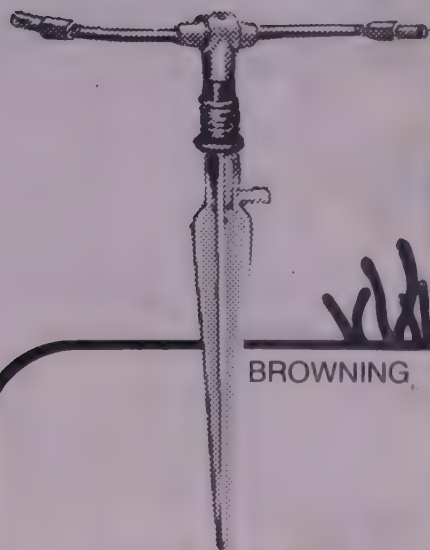
	Grapefruit	Lemons	Oranges	Total
PNG & Sol Is.	1.9	3.4	57.8	63.1
Pacific Is.	1.0	0.8	95.4	97.2
Brunei	0.1	0.1	—	0.2
Antarctic	0.3	0.2	0.4	0.9
Singapore	—	19.6	—	19.6
Malaysia	—	0.6	—	0.6
Philippines	—	1.2	1.3	2.5
Indonesia	—	2.1	7.5	9.6
UAE	—	0.1	—	0.1
	3.3	28.1	162.4	193.8

AUSTRALIAN CITRUS NEWS

MAY, 1981

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Plant Variety Rights (PVR)

The Commonwealth Government has now introduced into Parliament a Bill to provide the necessary legislation to make possible the granting of proprietary rights to people who breed or develop new plant varieties. The proposed scheme will be restricted to horticultural, ornamental and other selected pasture and fodder species. The major field crops and annual pasture species will not be considered for registration under the scheme.

OUTLINE OF PROPOSED SCHEME

The scheme will permit plant breeders, if they so desire, to apply to a registration authority and obtain sole ownership rights, for a limited period of time, over any new varieties which they develop. Breeders would be required to demonstrate that the variety is new, and differs in some significant way from all other varieties of the same species. Other requirements would be that the variety is uniform in that it does not show excessive variation between individual plants of that variety and is stable in its characteristics after repeated propagation. Breeders will not be forced to seek protection as the scheme will be entirely voluntary.

BENEFITS

In many respects plant variety rights

are similar to the granting of patents to inventors or copyrights to authors. The proposed scheme will encourage research and the breeding of new plant varieties by giving plant breeders the right to protect their investment of time, money, research and marketing efforts. It is only fair that breeders should have this right as plant breeding can be a very expensive exercise. Consumers would also benefit as there would be a wider range of plant varieties and thus a wider choice available to them.

Australian agriculture will benefit from the increased availability of improved varieties from Australian plant breeders and by having access to improved varieties developed in overseas countries.

HORTICULTURAL INDUSTRY SUPPORT

The Australian Horticultural Growers Council has so far fully supported the concept of Plant Variety Rights and following on indications of objections from some sections of the seed industry, has strongly pushed for the introduction of legislation for horticultural, ornamental and other selected pasture and fodder species.

Now that the Bill proposing this legislation is before Parliament, the

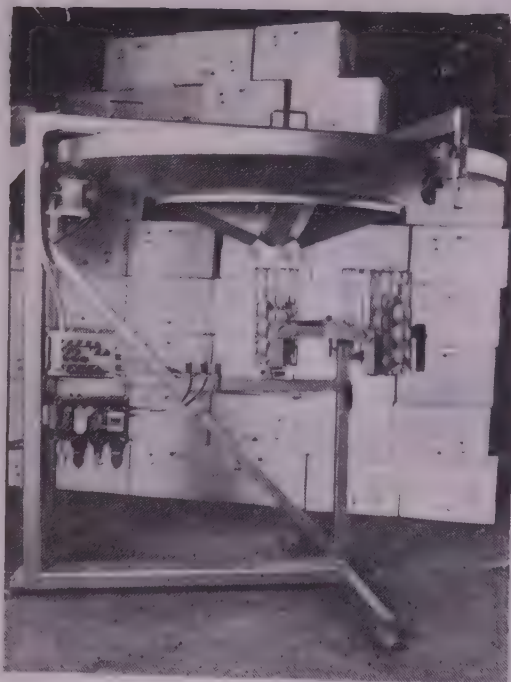
Council will be giving further detailed consideration to the matter at a meeting in Sydney on 25 June.

The Australian Citrus Growers Federation discussed the matter briefly at the Loxton Conference last month but deferred any firm decision until member organisations had had an opportunity to consider the proposed legislation.

It is understood that Parliament will not proceed further with the legislation until the Budget Session commencing in August, by which time the Australian Agricultural Council will have had an opportunity to discuss it, and interested parties will have also had an opportunity to communicate their views on it to the Commonwealth Government and to State Ministers of Agriculture/Primary Industries.

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Industry Doings

NEW LEMON BOARD CHAIRMAN

Mr. Ray Gibson of Kulnura via Gosford has been elected chairman of the Lemon Marketing Board of New South Wales.

Mr. Gibson is a well known citrus grower on the Central Coast of NSW. He is a former chairman of the Central Coast (NSW) Citrus Marketing Board, having retired from that position in 1977. In that capacity he was also a regular delegate to ACGF meetings.

Mr. Gibson's election to the position of chairman of the Lemon Board follows on the recent Lemon Board elections in NSW which resulted in five new members being appointed to the board for the three year term commencing 31 May, 1981 (see April A.C. News).

The previous chairman of the board, Mr. Barry Gheri was not re-elected.

The industry acknowledges the service rendered by Mr. Gheri during his three year term of office.

* * * *

DATES SET FOR 1982 CONFERENCE

The 34th Annual Conference of the Australian Citrus Growers Federation will be held at the Irrigana Motor Inn, Griffith on 17, 18 and 19 May, 1982.

Our efficient Mirrool Citrus Growers Association has already been on the job to set the preliminary arrangements in motion and growers should mark the dates. The 1982 Conference has been programmed to coincide with the projected school holidays in NSW, Victoria and South Australia.

* * * *

DON ECKERSLEY KNIGHTED IN QUEEN'S BIRTHDAY HONORS

The foundation President of the National Farmers Federation, Don Eckersley of Harvey W.A. has been knighted in the Queen's Birthday Honors

List for services to primary industry.

Sir Donald served two terms as President of the NFF and retired from the position in April this year when his home State, Western Australia failed to nominate him as a delegate to the Federation.

He served for four years as President of the Australian Farmers Federation and played a major role in bringing NFF into operation and guiding it through its two first difficult years.

Congratulations Sir Donald!

* * * *

OTHER AWARDS

Other fruit industry personalities who received Awards in the Honors List included Mr. Jack Pickworth of Tatura Vic. who was made a Member of the British Empire (MBE) and the Hon. Ross Story of Adelaide who was made a Companion of the Order of St. Michael and St. George (CMG).

Mr. Pickworth is President of the Australian Canning Fruitgrowers Association, a grower member of the Australian Canned Fruits Board and represents the growers of canning fruits on the Fruit Industry Sugar Concession Committee.

The Hon. Ross Story is well known in the South Australian citrus industry having been a grower at Renmark for many years. He was elected to the S.A. Parliament in the 1950's as a Member of the Legislative Council and was South Australia's Minister of Agriculture for several years. He is currently Secretary to the South Australian Cabinet.

Mr. Story's award was for political services.

* * * *

SCHOOL FOR IRRIGATION FARMERS

A school for farmers interested in irrigation will be held at the Murrumbidgee

(Continued on page 6)

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Dwarfing of Orange Trees

(Progress Report on Special Research Project by Dr. Mark Schwinghamer, Visiting Scientist at the Biological and Chemical Research Institute, Rydalmere, NSW)

The New South Wales Department of Agriculture has collected a number of orange budlines which, when grafted on-to young trees on *Poncirus trifoliata* root-stock, produce characteristic degrees of dwarfing.

Extensive field trials at Yanco and Somersby Research Stations have provided considerable information about the dwarfing: it can be reliably transmitted by bud inoculation, but does not appear to spread spontaneously between trees in the field. The dwarf orange trees show good fruit quality and yield in close-plantings at Yanco. In terms of cash return per hectare, dwarfs in high-density plantings are an improvement over normal trees at standard densities.

However, the graft-transmissible agents responsible for the dwarfing have not yet been identified, nor has the possibility of their mechanical transmission and effect on other crops been assessed. If, for example, dwarfing were transmissible by contaminated pruning shears and budding knives, accidental contamination of nondwarf nursery stocks might occur. Insect vectors or contaminated hedging equipment might lead to transmission between trees in orchards.

Research into these aspects should be done before dwarf oranges are propagated and planted on a commercial scale, so that risks, management procedures, and general applicability can be assessed. To this end, a citrus dwarfing research project has been initiated at the Biological and Chemical Research Institute, Rydalmere. The project was commenced in June 1980, and is supported for a two year period by government and industry funds, including a grant of \$3,000 from the Australian Citrus Growers Federation.

At the commencement of the project, there was already circumstantial evidence that the dwarfing agents were viroids; very small, replicating molecules of RNA (ribonucleic acid). Viroids are both graft-transmissible and mechanically transmissible. One type — citrus exocortis viroid — was previously shown by researchers in the United States to cause the exocortis (scalybutt) symptom characteristic of some Australian dwarfing budlines.

This Department of Agriculture had selected only nonscaling (scalybutt-free) budlines for commercial use but these still seemed likely to carry viroids. The immediate objective of the dwarfing project has therefore been proving the "viroid hypothesis".

The first step was to look for characteristic symptoms of viroids after inoculation of susceptible host plants

with orange source material. Etrog citron (a citrus species) is such a susceptible plant, and a particularly useful one, as orange buds "take" readily on it: i.e. inoculation can be done by bud-grafting, which is known to give transmission of the dwarfing, rather than by more uncertain mechanical methods.

One scaling budline (033) and nine nonscaling budlines (3531-3539) were used to inoculate citron cuttings. The scaling-type budline gave a rapidly-developing, severe leaf-curling symptom typical of citrus exocortis viroid. Only two of the non-scaling budlines (3532 and 3536) gave a reaction, though this was milder and more difficult to discern. These results indicate that 033, 3532 and 3536 carry viroids not present in non-inoculated, nondwarf trees. The remaining budlines could still carry viroids; if so, they are distinct in not giving clear symptoms on Etrog citron.

A second step towards proving the viroid hypothesis is being initiated at the present time. This involves looking for viroid RNA molecules, rather than just the symptoms they cause. The best way to do this is to extract RNA from leaves, and separate the different leaf RNA species by gel electrophoresis. If a viroid causes dwarfing, a unique RNA species should be present in the dwarfs. A preliminary experiment failed to show a unique RNA in 033-inoculated citrons, but further experiments of this type must be done with different budlines in orange or citron leaves.

It is possible that the gel electrophoresis approach will not be sensitive enough to detect the tiny amounts of viroid RNA in citrus leaves. For this reason, isolated citrus leaf RNA from different budlines is being used to inoculate tomatoes,

chrysanthemums, and velvet plants (*Gynura*). These plants could give higher levels of viroid, as well as revealing their own characteristic symptoms of viroid infection. Even so, more sensitive methods, involving radioactive tracers, may be required. These methods will be tried if the gel electrophoresis approach is unsuccessful.

A long-term aspect of this work will involve proving that the suspected dwarfing agents can actually cause dwarfing when isolated and used to inoculate orange trees. Dwarfing takes about four years to show up, so this type of experiment will be initiated as soon as possible. Inoculation with viroid RNA might eventually prove more efficient than bud-inoculation, and thus reduce the cost of producing dwarf trees.

In summary, biological indexing on Etrog citron supports the hypothesis that viroids are the agents which cause graft-transmissible dwarfing. More direct, biochemical approaches are now being used to test this. The information gained through this work should help determine the best and safest way of using dwarfing agents in propagation of dwarf orange trees.

Forecast of possible funding requirements for 1982-1983.

The dwarfing project, which has initial support for two years, has been under way for 10 months. Considerable progress has been made with indexing on Etrog citron, propagating host plants and standard viroids, and initiation of biochemical experiments. It is anticipated, however, that the work should continue for a third year if substantial information about the dwarfing agents is to be obtained. Support and expenditure for the project are itemized below:

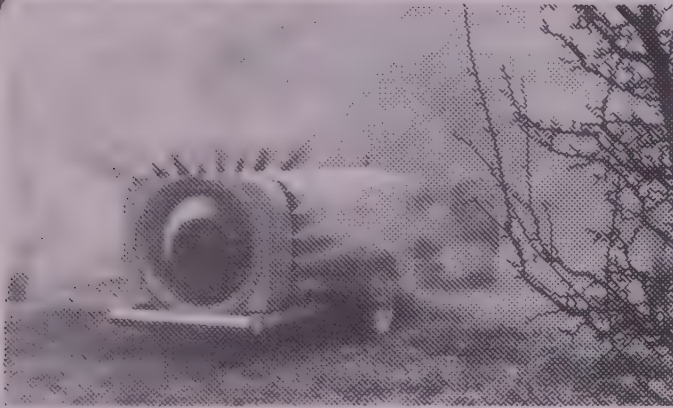
Source	Salary	Travel	Fare to Australia	Operating	Capital Items
	\$	\$	\$	\$	\$
Horticultural Stock & Nurseries Account	6000	-	-	-	3000
Commonwealth Special Research Grant	6000	-	-	-	-
Rural Credits Development Fund	24620	-	-	2200	-
Consolidated Revenue	-	1420	-	-	-
NSW Horticultural Propagation Co-op Society	-	1000	-	-	-
Australian Citrus Growers' Federation	-	-	640	2360	-
Totals	36620	2420	640	4560	3000
Expenditure to April 1981	14500	478	640	2020	1525
Balance (April 1981)	\$22,120	\$1,942	-	\$2,540	\$1,475

(Continued on page 7)

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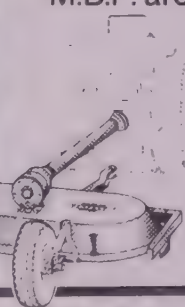
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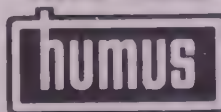


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Report on Seasonal Conditions — May 1981

New South Wales

Further widespread rains in coastal districts have broken the severe drought conditions while useful rain inland will ensure adequate winter soil moisture levels.

Harvesting of early maturing navels and mandarins continued in all districts but at a slower rate due to the rain and lower market prices. Fruit size and quality is good.

MAITLAND

Conditions continued fine and mild with cooler nights and further rain in the Lower Hunter (East Maitland 175 mm over 12 days). Harvesting of the very small Unshiu mandarin crop was completed. Navels were marketed late in the month, fruit quality and size is good considering the severe drought and reduced crops.

GOSFORD

Heavy falls of rain (194 mm over 17 days) has broken the severe drought and ensured adequate winter subsoil moisture levels. Harvesting of navels has commenced but at a slow rate due to poor market prices and demand. Fruit is above average size due to small numbers on the tree. Valencia's are sizing well since the April rain and slightly larger crops are now expected. Lemon crops are very variable but some, where irrigation was available, are of good size, quality and colour.

WINDSOR

Good falls of rain continued but induced false blossoming. The harvesting of navels and mandarins continued. Fruit size, colour and internal quality are good. Lemon harvesting at Maroota is continuing slowly with fruit of fair quality only. In this district tree removals are expected to be significant, being replaced with early stone fruit.

NARROMINE

Drought breaking rains of 49 mm were recorded. The navel harvest commenced with the reduced crop resulting in good fruit size and quality. Snail damage has become a problem in some blocks.

LEETON

Useful rain late in the month (43 mm) replenished subsoils just as the irrigation season was due to close on May 29. Maturity of the light navel crop is earlier this season although full skin colour has not developed. Fruit quality is good with little pest or disease problems. Grapefruit crops are satisfactory, of good fruit size and appearance. Harvesting will be delayed for processing with the aid of stop drop sprays to ensure better internal juice quality.

GRIFFITH

As only 23 mm of rain was recorded late in the month final irrigations were essential before the close of the season. Harvesting of late Valencia's was completed with a record local crop. Navels

are lighter than the previous season and harvesting has commenced with prices of \$140 to \$160 per tonne for packing quality fruit. Winter yellows is present in many young plantings.

MID MURRAY

Rain at Barham (37 mm over 10 days) has improved winter soil moisture levels. Harvesting of Valencia's has continued slowly with 5% of the crop remaining.

LOWER MURRAY

Continual rain from mid May delayed harvesting of early navels and mandarins. Small quantities of navels were exported during the month. The earlier estimate of reduced navels, mandarins and lemon crops is confirmed.

South Australia

Navel oranges are now being harvested after a very delayed colour development. Internal quality has been excellent with maturity advanced about 10 to 14 days earlier than usual. Average brix/acid ratio is now around 11.5/1. Fruit size is large.

The first export shipments are now being assembled. Advanced maturity and large light fruit signals the likelihood of a short navel season. There has been keen interest by packers in G.A. treatment of Navels and sprays were applied in the second and third week of May to delay rind ageing for later markets, including export.

Citrus red scale is heavier than usual, which may lead to some rejections during packing. (A lot of the red scale on foliage and fruit is now dead or parasitised and should remove easily during washing and packing). Biological Services at Loxton have announced a recovery of their parasite breeding and supplies of *Aphytis melinus* will again be available following an 18 month lapse in production.

Citrus prices have ranged from \$6.00 to \$6.50 for Navels, and \$4.50 to \$6.00 for grapefruit. Imperial mandarins at \$9.00 are in strong demand. Lemons have realized \$5.00 to \$7.00 with some up to \$8.00.

—“State of Agriculture”,
South Australia.

Industry Doings

(Continued from page 3)

bidgee College of Agriculture at Yanco, NSW from Monday 6 July to Friday 10 July, 1981.

The school has been organised by the Rural Youth Movement in conjunction with the NSW Department of Agriculture. The programme is designed to cater for the needs of most farmers, whether they are large scale operators or only interested in small irrigation projects.

Cost of attendance at the school is \$75. Anyone wishing to attend or seeking further information should contact the Dept. of Agriculture at P.O. Box 540, Leeton 2705 or phone (069) 533811.

ELMER PRODUCTS — NEW APPOINTMENTS

Peter Stinson has been appointed Production Manager at the Turrella plant of Elmer Products following the take-over of the company by Reckitt & Colman Australia.

He will take on the production responsibilities for a wide range of chilled and canned fruit juices, toppings, cordials and other fruit products, reporting to Mr. John Meyers, General Manager.

Peter has worked as a food microbiologist for 11 years after graduation from the NSW IT and comes

from the position of QC Chemist/Microbiologist in the Colmans division of Reckitt & Colman.

Graham Warnock has been appointed Finance Manager of Elmer Products. Previously Graham was Financial Accountant at Orlando Wines in Adelaide.

Graham is married with one son. He is a graduate from Adelaide University and also a member of the AASA.

* * *

AUF AWARD TO HARRY CHILTON

Mr. Harry Chilton, the Managing Director of F. Chilton Pty. Ltd., a company specialising in the overseas export of NSW, Queensland and Tasmanian fruit, has been made “Man of the Year in Australian Horticulture” for 1980.

The award has been introduced by the Australian United Fresh Fruit and Vegetable Association to honour the person who makes the most significant impact on the fruit and vegetable industry during the previous twelve months.

Mr. Chilton's award, the first one made by AUF was presented to him at the AUF Convention in Melbourne in May.

Mr. Chilton has had a long experience in the exporting of Australian fresh fruit and in wholesaling of fruit in NSW and other Interstate markets.

Dwarfing of Orange Trees

(Continued from page 4)

Operating and capital expenditure to date has been towards chemicals and equipment for analysing RNA; items in constant use which were not available at Rydalmere. If more sensitive methods are required, new types of chemicals and equipment will be necessary. In particular, an ultraviolet transilluminator (\$1,021) would allow sensitive detection of RNA.

The balances for operating costs and capital items should be adequate for the coming year, 1981-82. If the work is to continue in 1982-83, a further \$2,000 for operating costs and/or capital items would be required (salary would be provided by Rural Credits). As no other sources of finance would appear to be available, provision of a further \$2,000 by the Australian Citrus Growers' Federation for 1982-83 would greatly assist in continuation of this work.



Nonscaling Strain

Citron inoculated with nonscaling strain 3536. Note that 033 gives a more severe reaction than 3536.



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Scaling Strain



Healthy

Citron cutting inoculated with 033 scaling strain of dwarfing (left) compared with healthy citron (right).

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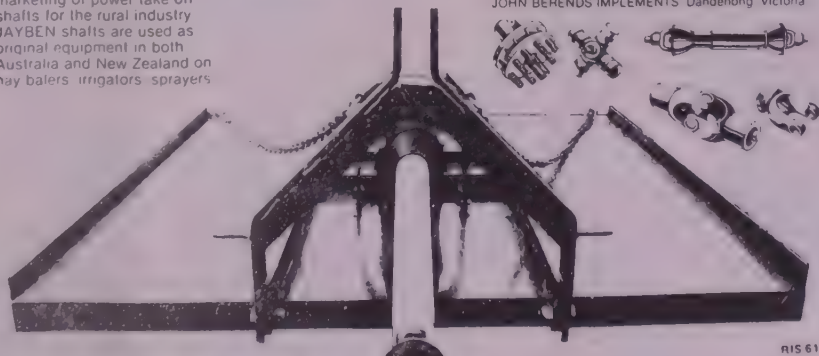
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AUSTRALIAN CITRUS GROWERS FEDERATION Annual Conference

Our candid camera caught some of the action at the Annual Conference at Loxton



Dr. Bruce Chandler of the CSIRO Division of Food Research is seen addressing the Conference on the Grapefruit Research Project.



Admiring some citrus at the conference, are the president of the Mirrool Citrus Growers Association, Mr. Harold Chapman, of Griffith, NSW, left, and the secretary, Mr. Ken Thompson, of Griffith.



A feature of the Conference Room was a special display of citrus and citrus products staged by the Murray Citrus Growers Co-operative Association under the guidance of Mr. Tony Swanbury.



During the Conference Dinner a special presentation was made to Mr. John Darnley Naylor for his service as ACGF President from 1977 to 1980. The current President, Mr. Walker, is seen presenting a 3-in-1 stereo unit to John while Mrs. Naylor looks on.

South African Citrus Tour Report

By J. Jennings, District Horticultural Adviser, S.A. Department of Agriculture, Waikerie

A month long tour of South African citrus growing areas by a party of 25 Australians from four states in June 1980 proved of great interest.

The tour was organised by the Central Coast Agricultural Research & Extension Committee in conjunction with Dr. Doug Stanton, the Manager of the Research and Technical Department, South African Co-operative Citrus Exchange Limited.

After assembling in Perth we flew for 11 hours via Mauritius and landed at Johannesburg at 22.30 hours where we were met by Dr. Stanton and our courier and driver. We then had a 58 km drive to Pretoria, a welcome orange drink and a cup of coffee before retiring at 1.30 a.m.

Pretoria is the Administrative Capital of the South African Republic and Cape Town the Provincial Capital. It is natural therefore that the bulk of the 680,000 population of Pretoria are public servants. Pretoria with its jacaranda lined streets must present a picture when in flower.

Church Square with the statue of Kruger and the old Raadsdal, the Voortrekker monument on the outskirts of the city are all significant historic symbols of this Nation.

ORGANISED MARKETING

Orderly marketing is both preached and practised as evidenced by an early morning visit to the Pretoria municipal market. With an annual market turnover around R50 million (R1 = \$A1.15), Pretoria ranks below Johannesburg, the largest municipal market. In Pretoria six markets are held weekly. Mr. du Preez, chairman of the market board, administers the market for the Citrus Exchange. The market is a non-protected, open market handling 110 commodities, of these, 18-20 fruit and vegetable lines are subject to 4 a.m. inspection by Department of Agriculture Inspectors.

While all citrus must be marketed through the Citrus Exchange, it can bypass central markets. The Exchange operates in five regions of the Republic. The city market is open for receivals 24 hours a day, but sale times are from 7.30 a.m. to 10 a.m., or longer by negotiation. All income from produce sales is deposited in a trust account within 48 hours of the sale.

Agents are not charged for floor space but they pay a fee for office and storage space, this amounts to 5%. Additionally the agent receives between 5% and 7½% commission, making a total maximum deduction of 12½%. By law the farmer must be paid within 15 days. As the turnover increases so the income of the municipal market increases, this in turn enables the city council to provide better facilities.

The market is managed by a committee consisting of 2 producers, 1 consumer,

1 trader, 1 Department of Agriculture inspector, 1 Railways representative and 1 council representative who is chairman.

All resolutions passed by the management committee must be submitted to the Minister of Agriculture within four days. Copies of all consignments must be received by the Board to ratify consignments and sales — any price discrepancies are met by the agent. Six citrus agents only are permitted in Pretoria market — this is a far cry from the situation in Australian terminal markets.

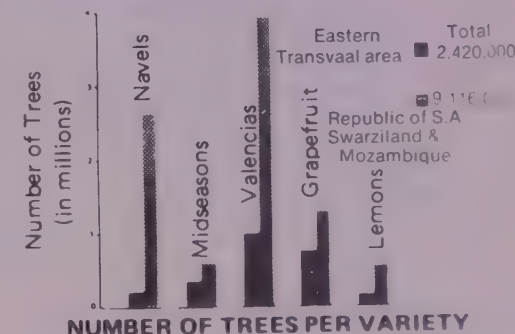
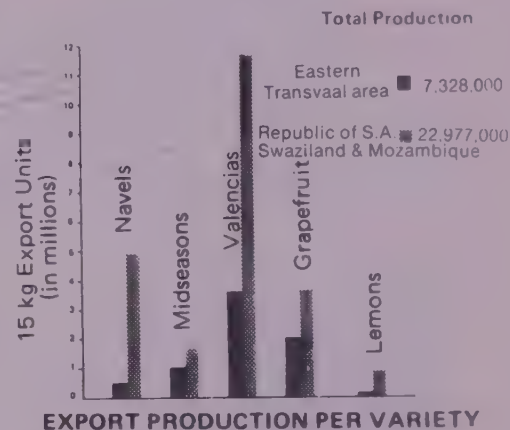
While the Citrus Exchange controls funds, agents have a trust account which is inspected by the Government and any reserve funds are held by the Minister of Agriculture to safeguard producers.

The Exchange treats growers as shareholders, providing an advisory service on soil management and fertilizers, pest and disease management, weather reports and any relevant information which could improve citrus quality.

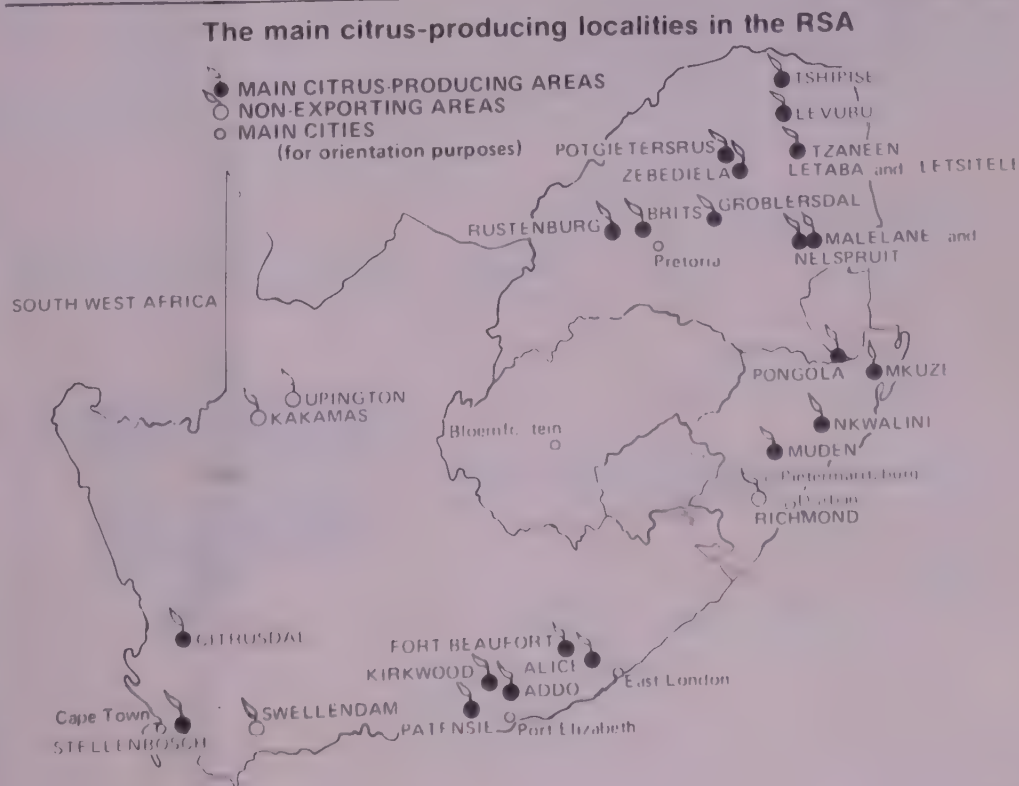
Fruit seen in the markets was of good condition. The navel season was tailing off so fruit was being sent up from the Cape Province. Navel exports had been underway 5-6 weeks, the navel harvest normally runs from March through to June. Navels were selling at R1.20 to R2.00 per 10 kg. Lemons at R2.00-R2.20 per 10 kg and pink grapefruit at 99c (S. African) per 4½ kg pack. Jackson grapefruit, a small fruited sweet variety were selling for 50c (S. African) for 5 kg.

Two grapefruit varieties, Jackson and Gold do not come under Exchange control. Gold is a large fruited variety.

The diagrams here show the number of citrus trees, and the production of export citrus in the Eastern Transvaal, compared with the country as a whole. Valencia oranges and Marsh seedless grapefruit are the predominant varieties in the Eastern Transvaal.



(Continued on page 14)



Federal Fruitgrowing Award — Wage Rates

In accordance with the decision of the Australian Conciliation and Arbitration Commission in the National Wage Case involving the December 1980 and March CPI Quarterly adjustments the following rates of pay apply from the beginning of the first pay period commencing on or after 7 May, 1981:

MALES AND FEMALES		Weekly	Hourly
No. Classification		Permanent	Casual
		\$	\$
1.	Fork Lift Truck Driver	176.50	5.18
2.	Motor Lorry Driver	176.50	5.18
3.	Tractor Driver	173.00	5.08
4.	Employee engaged in sorting, grading, and/or packing fruit	163.50	4.80
5.	GENERAL HAND — Class 1 An employee who performs work of any of the following classifications: Sweat lumper, maintenance worker in charge of machinery, concrete worker and/or rack builder, trelliser, box maker by hand, boiler attendant, furnace attendant	173.00	5.08
6.	GENERAL HAND — Class 2		
(i)	An employee who performs general duties as directed other than those elsewhere specified herein	169.20	4.97
(ii)	An employee who performs general duties as directed other than those elsewhere specified herein and who has been continuously employed by an employer for at least two years	173.00	5.08
7.	LEADING HAND	Extra per week	
(i)	In charge of 2 to 6 employees	\$ 8.30	
(ii)	In charge of 7 to 10 employees	8.90	
(iii)	In charge of 11 to 20 employees	13.80	
(iv)	In charge of over 20 employees	17.90	
A leading hand shall mean an employee appointed to be in charge of and to supervise the work of other employees.			

JUNIOR EMPLOYEES

(a) The minimum wage payable to junior employees shall be the under-mentioned percentages of the weekly adult wage rate for the classification under which they are employed.

1.	In Orchards and Vineyards:	Percentage of the Weekly Adult Wage Rate
	At 15 years of age	50
	At 16 years of age	60
	At 17 years of age	70
	At 18 years of age	80
	At 19 years of age	90
	At 20 years of age	100
2.	In Packing Houses, Cool Stores and Dehydration Plants:	
	At 15 years of age	50
	At 16 years of age	70
	At 17 years of age	80
	At 18 years of age	100

Conference Supports Urgent Action On Salinity Problems

Delegates attending the ACGF Annual Conference from all States expressed deep concern at the lack of progress being made in establishing adequate control over the quality of water in the River Murray Basin and the resultant increasing salinity problems in irrigation districts.

Typical of this concern was the following resolution moved by delegates from the Leeton Citrus Growers Association and carried unanimously by the conference:

“That ACGF strongly supports—

- (1) a coordinated national approach by those horticultural industries affected by salinity problems to the amelioration of problems caused by the increasing salinity levels in water used for irrigation purposes, particularly in the River Murray Basin, and also in the general level of salinity in farm soils;
- (2) urgent involvement by Governments in the planning and capital expenditure necessary for the alleviation of salinity problems;
- (3) the need for all data relevant to the salinity issue to be collected and collated from the various Government Departments and Agencies;
- (4) the need for a close study of all available overseas literature on salinity problems with a view to assisting the necessary planning of action to alleviate the problems; and
- (5) the need for urgent action to review the role and powers of the River Murray Commission with a view to giving that Commission complete authority over the quality of the water in the River Murray, in addition to its present authority over quantity”.

In carrying this resolution the conference was aware of the establishment of a Save the Murray Council in South Australia and other action groups in the Sunraysia area, and delegates considered that an expression of strong support from the ACGF conference would give support to the important work being carried out by these groups.

News from Overseas

U.S. CITRUS CROP AFFECTED BY FREEZE

As at February 1981 prospects pointed to a US citrus crop of 13.6 million tonnes for 1980-81, down 9% from the previous month's estimate and also 9% less than the previous season. The reduced estimate was mainly because of the mid-January freeze in Florida.

Because of the freeze damage, prices for both fresh and processed citrus rose moderately to sharply above a year ago. Prices are expected to remain high during the rest of the 1980-81 season.

★ ★ ★ ★ ★

MEDITERRANEAN FRUIT FLY CAUSING PROBLEMS IN CALIFORNIA

Mediterranean fruit fly is causing problems for large sections of the Californian citrus industry.

Indications are that fumigation treatment with ethylene dibromide (EDB) could become necessary.

The situation has been made worse by the announcement by the US Environmental Protection Agency (EPA) that it plans to phase out use of EDB as a fumigant due to possible consumer hazards from residue and a potential damage to workers applying the chemical to the fruit.

The industry has objected to the EPA decision on the basis that the EDB system of fumigation has been in use since 1956, and repeated studies have found residues negligible, even in the fibreboard of treated containers.

The industry has stated that EDB represents no real danger to people because of its rapid breakdown.

★ ★ ★ ★ ★

SOUTH AFRICAN EXPORT PROSPECTS

Export availability from the 1981 South African citrus crop is expected to be slightly higher than last year. The total citrus crop is forecast at 722,000 tonnes, up 1% over last season and includes 569,000 tonnes of oranges, 111,000 tonnes of grapefruit and 43,000 tonnes of lemons. Given favourable markets, exports are likely to reach 370,000 tonnes of oranges, up 2%; 82,000 tonnes of grapefruit, up 3%; and 29,000 tonnes of lemons, up 14%.

★ ★ ★ ★ ★

JAPAN ANNOUNCES CITRUS JUICE IMPORT QUOTAS

Japan has announced the citrus juice import quota figures for the Japanese fiscal year — April 1980 to March 1981. The global quotas were 5,000 tonnes of orange juice and 3,000 tonnes of grapefruit juice (5:1 concentrate basis). All imported orange juice must be sold as

(Continued on page 13)

JUNE, 1981

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XXIst International Horticultural Congress

The XXIst International Horticultural Congress will be held in Hamburg in the Federal Republic of Germany from Saturday, 29th August to Friday 4th September, 1982. An invitation to all horticulturists to attend has been extended by the International Society for Horticultural Science and the German Society for Horticultural Science.

The official language of the Congress will be English and the registration fee will be approximately \$140.

The program will cover temperate zone fruits, citrus, tropical horticulture, vegetables, floriculture, woody ornamentals, mushrooms and medicinal and spice plants. Within these commodities there will be a wide range of subject matters including harvest and postharvest problems, production methods, horticultural engineering, pollution and environ-

ment, quality ingredients in residues, economics and research methodology. As well provision is being made for sessions to cover botanic gardens, amateur horticulture, school gardens and biological centres and horticultural communication teaching and training.

Presentations will be by way of invited papers, contributed papers and posters. Titles of papers and posters must be forwarded to the Congress secretary by September 15, 1981.

A number of pre and post Congress tours as well as local excursions and a comprehensive social programme will be offered.

Further information is available from the Congress Secretariat at the following address:
Hamburg Messe and Congress GmbH
P.O. Box 30 23 60
D-2000 Hamburg 36
Federal Republic of Germany

Death of ADFA General Sec.-Manager

The "Australian Citrus News" records with sadness the passing of Mr. Laurie Burgess, General Secretary/Manager of the Australian Dried Fruits Association in Melbourne following a heart attack.

Mr. Burgess was 60 years of age.

He joined the staff of ADFA in 1962 and was appointed General Secretary-Manager in 1973 on the retirement of the previous chief executive, Mr. Ron Curtis.

Mr. Burgess leaves a widow, Phyl and family and the citrus industry extends deepest sympathy to the family at this time.

A member of the ADFA Board of Management and former General Manager of Mildura Fruit Products Co-op. Ltd., Mr. Bill Jackson has been appointed Acting General Secretary-Manager for the time being.

PRELIMINARY NOTICE HORTICULTURAL TOUR

**XXIst INTERNATIONAL HORTICULTURAL CONGRESS
HAMBURG, WEST GERMANY
29th August to 4th September 1982**

The Central Coast Agricultural Research & Extension Committee is planning a 4-5 week tour to Europe which will incorporate attendance at the International Horticultural Congress.

CONGRESS — Papers are currently being called and will cover a wide range of horticultural commodities. The Congress will cater for all aspects of horticulture, scientific, technological and for practising horticulturalists, both professional and amateur, as well as for extension and research workers.

PRE & POST CONGRESS TOURS — In conjunction with the Congress, ten tours of five days each will be offered. Some will not only cover Germany but neighbouring countries as well such as Denmark, Italy and Holland.

LOCAL EXCURSIONS — Throughout the Congress about 15 different half and full day tours will be available. These will cover areas within the city as well as important production centres for fruits, vegetables, floriculture and ornamentals in the immediate vicinity of Hamburg. These tours will be expertly guided. As well the tourist office will offer visits to museums, art galleries, theatres, concerts etc.

Receptions and cultural events will be prepared for the Congress participants and accompanying persons, including a final evening party reflecting the maritime Hamburg surroundings.

Free time will be allowed following the Congress.

ENQUIRIES — Some indication of interest would be appreciated by CCAREC to facilitate tour arrangements. Enquiries should be made to:—

**Hildegard Wilkinson or Fred Walpole
P.O. Box 362, GOSFORD, N.S.W. 2250
Phone: (043) 25 0247**

News from Overseas

(Continued from page 11)

a product blended with domestic juice, but no blending is required for marketing imported grapefruit juice.

★ ★ ★ ★ ★

ISRAEL'S EXPORT ESTIMATES REVISED

Israel's Citrus Marketing Board has revised its estimates of 1980-81 season fresh citrus exports. These are now expected to total 846,000 tonnes, down 3.8% from previous expectations, and 3% below last season's exports. Total 1980-81 orange exports are now forecast at 549,000 tonnes down from an initial estimate of 601,000 tonnes, and 5% below the 1979-80 exports. Valencia orange exports are expected to total only 156,000 tonnes, 29,000 less than the pre-season forecast. Grapefruit exports, however, are forecast to reach 252,000 tonnes, 5% more than anticipated, and about the same as last year. Lemon and tangerine exports are expected to reach 25,000 and 20,000 tonnes respectively, moderately higher than originally forecast.

★ ★ ★ ★ ★

SPAIN'S CITRUS EXPORTS AFFECTED BY WEATHER

Spain's citrus exports in the 1980-81 season are expected to decline from earlier predictions of 1.7 million tonnes to 1.4 to 1.45 million tonnes because of the cold weather and gales in late November and early December.

Trade sources are expecting exports to be reduced by 200,000 tonnes of oranges, 30,000 to 50,000 tonnes of lemons and from 25,000 to 50,000 tonnes of tangerines.

The below-zero temperatures reportedly caused little or no damage to trees which were budding somewhat earlier than normal. Barring adverse weather, the 1981 citrus crop is expected to be normal.

★ ★ ★ ★ ★

EDITOR'S NOTE: "News from Overseas" is gleaned from USDA publications and other overseas industry journals. Their assistance in providing this information is acknowledged.

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South African Citrus Tour Report

(Continued from page 9)

CLIMATIC INFLUENCE

As we moved from North to South the similarity between South Africa and Australia became apparent. The Northern Transvaal with its dry winter and summer rainfall was comparable to our Queensland region, while from Durban south, the rainfall changed to winter rainfall with conditions similar to our southern states. The northern areas produce mainly valencias, a few navels, grapefruit and a few tangerines or as the South Africans call them, Naartjies, also Tamango a sweet, mid season seeded variety, and lemons.

A visit was made to Johannesburg, a city of 1.4 million people. The city is surrounded by huge mine dumps from its 23 gold mines which contribute towards South Africa's total annual gold production of 700 metric tonnes.

All of this wealth has resulted from a gold strike by an Australian, George Harrison in 1886.

Then a visit to the Premier diamond mine in Cullinan, producing 1,600 carats daily, gave us all some indication of South Africa's mineral wealth.

ZEBEDIELA ESTATE

Travelling 100 or so kilometres north, we passed through grazing country, interspersed with sorghum, maize and cotton before reaching Zebediela Estate, the world's largest citrus estate at the foot of the hills.

The estate of 10,800 ha has 540,000 citrus trees — 55% being navels, 45% valencias plus 30,000 lemon trees. In addition to citrus they grow 400 ha of corn,

have a dairy herd of 90 Friesian cows and 2,000 beef cattle. Annual citrus production is near 4 million cartons. The Estate has a white population of 72 and a native population of 2,200.

A lovely smorgasbord lunch with the staff and Dr. Dave Bester, the Director, provided members with the opportunity to discuss this huge project. Estates of this size are serviced by a nutrition specialist, an engineer, an entomologist and a packing house manager as well as field managers.

Some 340 bores supplemented by reservoir water provide irrigation for the total area. Rising salinity problems and declining tree health are forcing the use of undertree irrigation. Many types of low throw sprinklers are being tried and irrigation scheduling is being determined. With 650 mm of rain annually, falling mostly in the summer, individual tree bays to trap rain have been used and this has been labour intensive. A mini jet with a 1.2 mm nozzle putting out 50L per hour at 1.3 atm pressure wetting a 2.5m radius has been developed. The jets are placed close to the tree butt and water is dispersed on hitting the hood with its 15 serrations over a 300° angle, the 60° unwetted zone keeps tree butts dry.

All trees on the property are skirted to keep the ant problem to a minimum.

Pest management is a problem. After using Parathion for 30 odd years, red scale resistance to organophosphates has occurred. A strong swing to oil usage and the introduction of parasites, plus the re-introduction of *Aphitus africanus*, a native parasite, is being pursued. Dust from trafficking in the orchards is proving a major problem with scale build up. Herbicides used are Bromacil and Diuron. Fertiliser usage is based on leaf analysis — South Africa is still using leaves from spring flush fruiting terminals. A 3:1:5 NPK mixture is used on this property with soils of 0.3-1m of top soil over clay and a pH of 5.5 to 6.

Magoebaskloof in the high veldt was a lovely setting from which visits were made to the Sapckoe Tea estate, a 600 ha estate and factory. As tea requires 1,875 mm of water the 1,500 mm of rain received needs to be supplemented by irrigation. At present all the tea is hand picked on a 10-12 day cycle, each tip of 2 leaves and 1 bud weighs 1 gm and a picker averages a minimum of 22 kg per day.

WESTFALIA

The Westfalia Landgoed Avocado estate of 4,240 ha, produces timber, pecans and tea as well as 500,000 cartons of avocados from this 120 ha of producing trees. In another 2 years the aim is to have 240 ha of avocados producing, with an export target of 1 million cartons. The most popular varieties are Hass, Fuerte and Ryan.

Phytophthora cinnamomi is a major problem. Duke 6 and 7 rootstocks are

being used and infra-red photography is used to determine the *P. cinnamomi* level before a replanting is undertaken. Mediterranean and Natal fruit fly are present in the area but bio control in the bushlands is adequate.

The three-tier etiolation technique of propagation is being successfully used to grow nursery trees on resistant stocks using Guatemalen seed and Duke 6 and 7 interstock. To maintain fruit quality, two hourly deliveries of fruit are made to the packing house to avoid over heating. Pre-cooling to 13°C before packing, is followed by forced air cooling of palatised fruit to 5.5° to 6.5°C. Cooling below 4°C causes fruit damage.

The avocado industry appeared to be highly mechanised and the most modern techniques were being used.

LETABA

A visit was next made to the Letaba Citrus Estates, a 1,598 ha citrus property employing 1,500 and growing navels, mid season valencias and other citrus plus 70 ha bananas and 10,000 mango trees. Here Dave Lotter the manager, Neil Dy Sautoy the orchard adviser and Mr. Honiball the entomologist, conducted the party in small groups over the property. Serious organophosphate resistance was almost a catastrophe; however with a swing to white oil and biological control, tree health has almost recovered. Considerable interest is being shown in a range of easy-peelers, Dancy, De Wildt (Ellendale), Mineola Tangelo, Page, Nova, Lea, Wilking and Osceola. Rootstocks aimed at improving solids are under investigation. Troyer citrange is giving reduced cropping.

On replant trials rough lemon is favoured — Troyer is collapsing at 9-10 years apparently from a *Fusarium* root condition. Rust mite and the greening micoplasm are present in these areas. Potash is used to improve fruit sizing.

Since 1972 flood and furrow irrigation is giving way to undertree sprinklers — water quality is good but shallow soils require draining.

(To be continued)

— "Rural Newsletter"
December, 1980.

Recipe of the Month

MANDARIN MARMALADE

Wash and slice 12 mandarins very finely. Stand overnight in 15 cups (6 pints) of water. Next day, boil until rind is tender and water is well reduced. Stand for 12 hours and then add 1 cup of sugar to every cup of fruit, plus the juice of two lemons. Boil quickly until it jellies when tested.

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Fresh Citrus Exports

MARCH SUMMARY

AUSTRALIAN FRESH FRUIT EXPORTS BY STATES (TONNES)

	Qld.	NSW	Vic.	S.A.	W.A.	Total
Grapefruit	1.6	1.2	1.8	—	—	4.6
Lemons	2.1	2.5	0.4	1.1	27.4	33.5
Mandarins	1.0	—	—	—	—	1.0
Oranges	24.2	142.7	36.6	30.0	—	233.5
	28.9	146.4	38.8	31.1	27.4	272.6

AUSTRALIAN FRESH FRUIT EXPORTS BY DESTINATIONS (TONNES)

	Grapefruit	Lemons	Mandarins	Oranges	Total
PNG & Sol. Is.	2.1	2.5	1.0	48.3	53.9
Pacific Islands	2.2	1.2	—	178.0	181.4
Singapore	—	24.5	—	—	24.5
Malaysia	—	2.5	—	—	2.5
Philippines	—	1.4	—	1.4	2.8
Indonesia	—	1.0	—	0.1	1.1
Christmas Islands	0.2	0.3	—	5.7	6.2
U.A.E.	0.1	0.1	—	—	0.2
	4.6	33.5	1.0	233.5	272.6

Irrigation Storages Report

May Summary

STORAGES	Capacity Megalitres	Week Ending 27-5-81 Megalitres
Hume Reservoir	3,038,000	312,000
Lake Victoria	680,000	463,000
Dartmouth Reservoir	4,000,000	1,625,000
Menindee Lakes	1,794,000	640,000
Burrinjuck	1,026,000	133,380 (Apl.)
Blowering	1,628,000	455,840 (Apl.)

WATER FLOWING TO SOUTH AUSTRALIA (River Murray)

Week ending 27-5-81	20,000
Monthly entitlement for May	93,000
Total for May to 27-5-81	81,000
Total for April	135,000

WATER QUALITY (River Murray)

(Average quality for week — total dissolved solids in parts per million)

	27-5-81	(28-5-80)
Swan Hill	149	210
Euston	133	208
Red Cliffs	202	254
Merbein	222	283
Lock 9	216	204
Lake Victoria	252	300
Berri	366	504
Waikerie	516	588
Mannum	534	576
Murray Bridge	630	534

Extracts from River Murray Commission Reports and NSW Monthly Weather Review.

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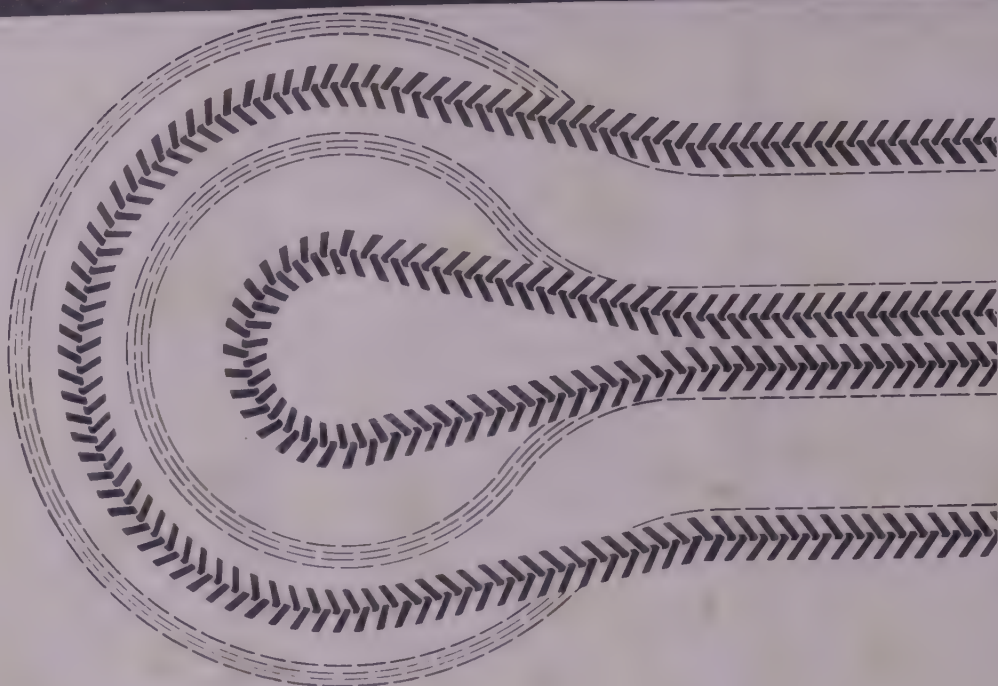
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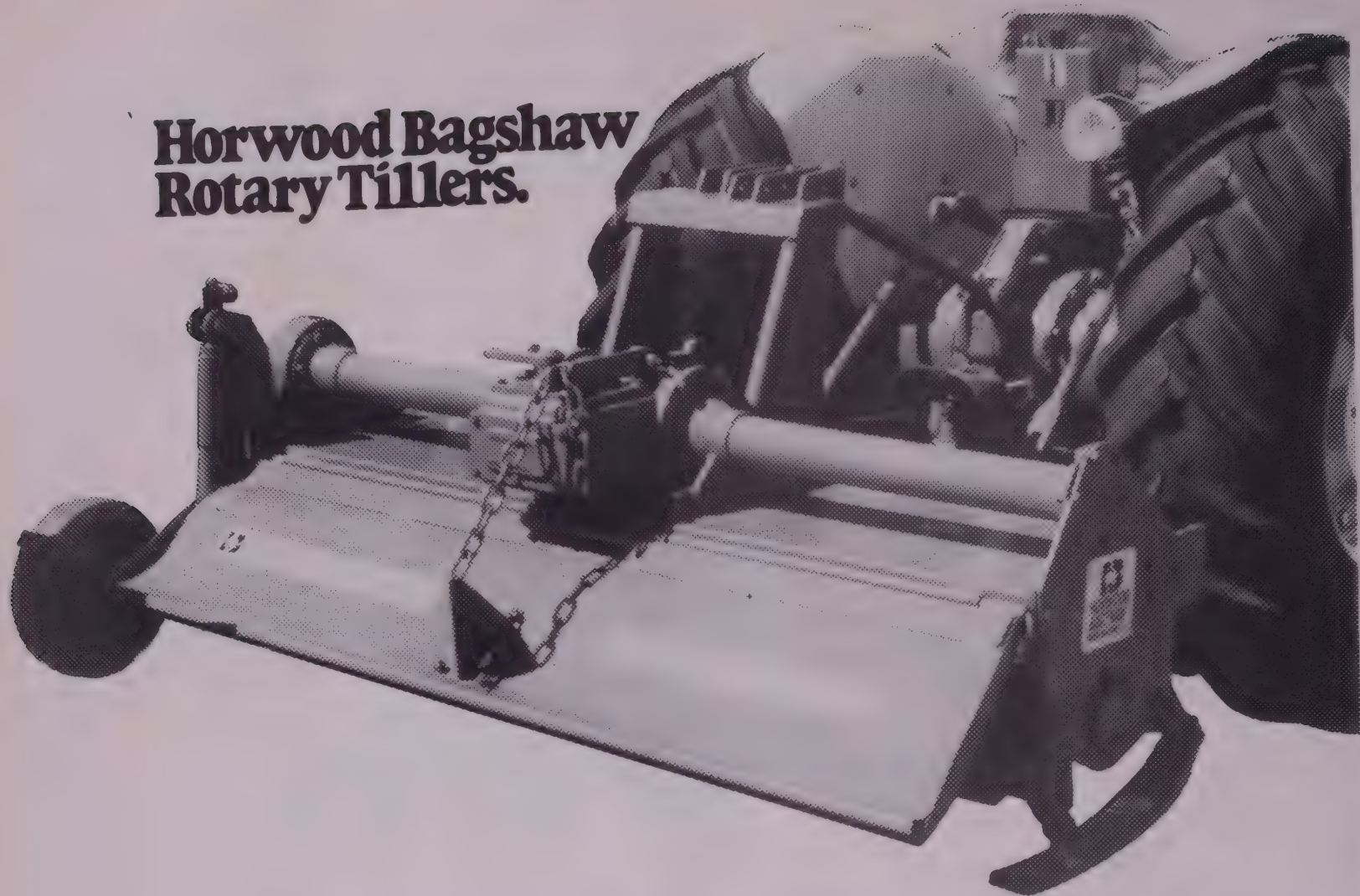


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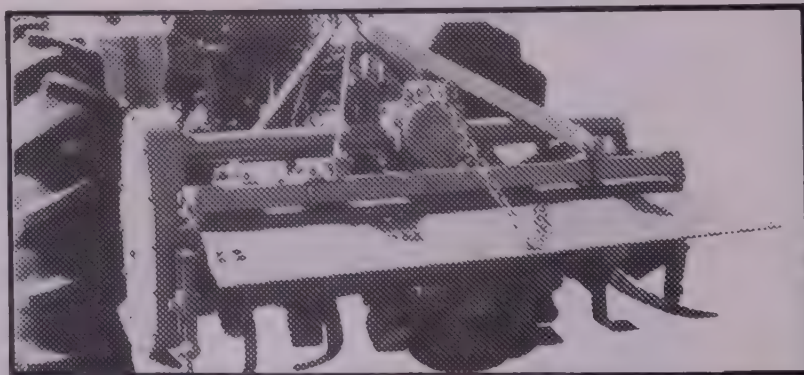
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Industry Doings

NEW CHAIRMAN FOR VICTORIAN CITRUS BOARD

Mr. Jerome Nugent-Smith has been appointed Chairman of the Citrus Fruit Marketing Board (Victoria).

Mr. Nugent-Smith, 35, who was appointed to the Board in April of this year, replaces Mr. Philip Henry who has resigned.

* * * *

INDUSTRY MEETINGS

The annual meeting of the Australian Citrus Industry Council will be held in Sydney on Thursday, 17 September.

The Council comprises three representatives each from the Australian Citrus Growers Federation, the Australian Citrus Processors Association and the Australian Fruit Juice Association.

Mr. A. C. (Bill) Korallis, of Berri Fruit Juices Co-op. Ltd., is the current President of the Council.

The ACGF Executive Committee will hold a meeting at Gosford on Wednesday, 16 September.

Important ACGF meetings have also been held during August. The IAC Sub-Committee and the ACGF Working Committee both held meetings in Sydney on 25 August.

* * * *

DEPARTMENT OF PRIMARY INDUSTRY APPOINTMENTS

Mr. Geoff Miller, the Director of the Bureau of Agricultural Economics, has been appointed Deputy Secretary of the Department of Primary Industry in Canberra.

Mr. Miller, 39, an economist, is well

known in farming circles through his involvement in the Annual National Agricultural Outlook Conference held in Canberra.

He took up his new position during August, replacing the former Deputy Secretary, Mr. Max Moore-Wilton, who has been appointed General Manager of the Australian Wheat Board.

Mr. Michael Blamey has been appointed First Assistant Secretary of the Department's Sugar and Horticultural Crops Division.

He replaces Mr. Athol Lloyd who retired from the Public Service in July.

Mr. Blamey is a former officer of the Department of Trade and Resource and since joining the Department of Primary Industry last year he has been closely involved with policy development and the negotiations to establish a closer economic relationship with New Zealand.

* * * *

RIVERLAND GADGET DAYS

The 24th Riverland Gadget and Implement Field Days will this year be held at Renmark on Friday and Saturday 23 and 24 October.

The 1981 Field Days will be conducted by the Renmark Agricultural Bureau and will be held in conjunction with the annual Renmark and District Show.

As well as commercial exhibits of static implement and machinery displays there will be four sections for grower and farmer gadgets, agricultural, horticultural, safety (both agricultural and horticultural) and a special ladies section.

Persons wishing to enter gadgets should phone Mike Bennett on (085) 866208.

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Mechanical Harvesting of Citrus in Victoria

B. M. El-Zeftawi, R. T. Dimsey and I. R. Thornton
Sunraysia Horticultural Research Institute, Irymple, Vic. 3498
and

I. V. Gould

Agricultural Engineering Centre, Werribee, Vic. 3030

(Report presented to the 33rd Annual Conference of the Australian Citrus Growers' Federation, Loxton, May, 1981)

INTRODUCTION:

The citrus mechanical harvesting program started at Irymple in 1975 by testing a 'shock-wave trunk shaker' head that was used successfully for harvesting peaches in the Goulburn Valley. Results obtained at the time were promising. Fruit removal was about 65-90% depending on species, cultivar, rootstock and the fruit loosening chemical used. Fruit damage as a result of shaking the fruit onto the ground was not significant, although 10% wastage had developed after two weeks of shelf life at room temperature. In addition no apparent damage was done to the trees even though very high pressures were applied when clamping onto the butt of the tree.

At that stage the main two operations required to (a) remove and (b) catch/retrieve citrus fruits by mechanical means were assessed horticulturally and economically as separate development phases with a view towards successful merging of the two.

An integrated system consisting of a mechanical trunk shaker and a catching/retrieval trailer, incorporating a roll-out sheet that collects fruit has been developed. Fruit is brought into the trailer conveyor by hydraulically drawing the sheet from the furthest end back over the fruit.

1. FRUIT REMOVAL:

The system removes about 80 to 95% of the fruit depending on species, rootstock and whether or not abscission chemicals are used. Some refinements in mechanical/shaking/catching/retrieval techniques are still required. However, it is highly likely that commercially acceptable results can be obtained for harvesting of navels, grapefruit and lemons for both processing and fresh fruit markets. With valencia oranges the commercially acceptable stage is further away because of the lack of an effective abscission chemical, the retightening of the fruit during re-greening and the effects of shaking on subsequent crops.

2. ECONOMICS:

Proper economic assessment of the system is not possible at this stage of development but it is estimated that harvest rate is increased 4½ fold compared with hand harvest, based on a harvest time of 190 seconds per tree.

3. ADOPTION:

General grove implications of such a system are consistent with good management practice and should not hinder its adoption in the next four years.

4. ABSCISSION CHEMICALS:

Many chemicals can cause fruit abscission but for a chemical to be useful in regulating fruit loosening as an aid to mechanical harvesting it should have the following characteristics:

1. Ability to reduce fruit detachment force to the point of loosening the fruit without causing it to fall thus enabling the fruit to be removed manually or mechanically.

2. It should not cause damage to the fruit rind.

3. It should not adversely affect internal fruit quality.

4. It should be specific to mature fruits in the case of valencia oranges and lemons.

5. It should not affect subsequent cropping level when it is used every season.

4. (1) EFFECTIVENESS:

For valencia orange, ethephon is not effective or specific for the mature crop but it does improve fruit quality. Testing other chemicals have shown that no available chemical is better than

ethephon particularly from a quality point of view. Combinations of abscissants using ethephon as a base to enhance fruit removal of valencia oranges and lemons have been tested particularly during the re-greening period when the re-greening process inactivate the responsiveness of valencia oranges to all abscission chemicals.

The effects of ethephon on fruit detachment and removal of valencia orange were compared with Release, Pick-Off, Sweep, Harvade and Alsol alone and in two-and three-way combinations during regreening from late November to late April.

Least natural fruit attachment force was found during the physiological fruit drop period in December after which the fruit retightened then became loose again later in the season. Hence abscission chemicals used later in the season were more efficient but unfortunately fruit quality had declined through normal senescence and granulation in particular.

4. (2) PRESENT STATE:

The practicality of using abscission chemicals for loosening valencia oranges as an aid to fruit shake-removal is questionable at present. However, this does not mean that the efficiency of fruit shake-removal of valencia oranges cannot be increased but rather that there is a need for the development of a new, more efficient abscissant(s) or a new shaker which does not require an abscissant as a pre-requisite for efficient fruit recovery.

4. (3) LONG TERM EFFECTS:

The response of Washington navel and Leng navel, Newton valencia, Marsh grapefruit and Lisbon lemon to long-term fruit shake removal has been studied over four consecutive years. Fruit removal and fruit yield by weight and count were recorded in relation to a yearly ethephon application at 350 ppm one week before harvest.

Although fruit removal was increased in most cases by ethephon because of reduced fruit attachment force, ethephon decreased subsequent fruit yield. However, yields of mechanically harvested trees without ethephon were as good as yields from hand-picked trees with ethephon though they were lower than yields of hand-picked trees without ethephon.

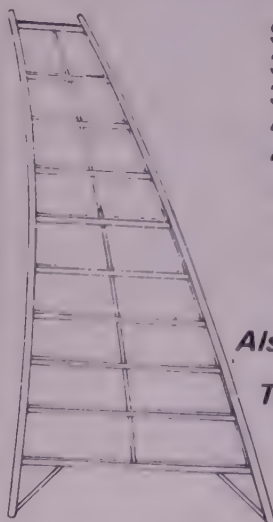
The results suggest that subsequent yields may be related to the time of mechanical harvesting and ethephon application via effects on floral emergence. Studies therefore are needed to determine the optimum time for mechanical harvesting citrus.

(Continued on page 14)

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Before Planting a Citrus Orchard

By PETER GALLASCH, Senior Research Officer (Citrus), South Australian Department of Agriculture

The most important management decisions determining the long-term profitability of a citrus orchard must be made before the trees are planted. They include which soil type to use, whether to fumigate the area before planting, what variety and rootstock combination to select, and what tree spacing and row orientation to use.

To avoid mistakes it is necessary to spend considerable time and money thoroughly investigating all aspects of a proposed orchard.

When the variety and rootstock combination has been selected, it is important to order trees, one to two years before they are required, from a reliable nurseryman who can correctly identify and guarantee supply.

Wherever possible, windbreaks should be established before the trees are planted.

THE INDUSTRY

When planting citrus trees, growers should realize they are entering a well-established industry and adding to its production. The SA citrus industry has about 46 packing sheds, 11 processors or convertors and about 1,000 growers. There are companies involved in the exporting of fruit, growers' organizations and the Citrus Organization Committee, which regulates marketing and looks after growers' interests.

Practically all citrus grown for sale in SA is produced on the well-drained sandy mallee soils adjacent to the River Murray. Mature trees are irrigated annually with 900 to 1,300 mm of water, applied mainly by sprinkler or micro jets, but occasionally by furrow irrigation. Irrigation is necessary because natural rainfall in the Riverland is only about 250 mm a year.

Mature trees may produce up to 100 tonnes a hectare of citrus fruits but the State average is about 30 tonnes a hectare. The annual gross value of the State crop is currently about \$35m.

SITE

Although citrus grow on a range of soils they prefer deep, well-drained soils. Soils that have not previously grown citrus trees are preferable because soil-borne pathogens, which attack citrus roots, would not have built up in them. Where citrus or vines have been grown, counts of nematodes should be taken and will usually indicate that pre-plant fumigation is necessary.

Citrus should not be planted where severe winter or spring frosts are likely. Lemons are the most susceptible to frost damage, but all young citrus trees can be killed by severe frosts.

Rootstocks should be selected to match the soil type.

ROOTSTOCKS

Because the black citrus aphid trans-

mits the citrus disease tristeza to all citrus trees, it is essential to use only stocks that have a high degree of tolerance to the tristeza virus.

For oranges, grapefruit and mandarins, the tolerant stocks include Sweet Orange, Cleopatra Mandarin, Emperor Mandarin, Troyer and Carrizo citrange and Rough Lemon.

For lemons, Sour Orange can also be used because the lemon scion gives tristeza tolerance to the plant. Sour Orange must not be used for any sweet orange, mandarin or grapefruit scions.

ROUGH LEMON

Rough Lemon is a widely used rootstock. Its advantages are that it is easy to grow in the nursery and has a degree of tolerance to drought because of its relatively deep root system. Recently, more precise methods of irrigation have been widely adopted and water is available more frequently under "order water" systems; consequently, drought tolerance is now less important.

Trees on Rough Lemon stocks grow rapidly and produce good crops, but compared with trees on Sweet Orange stocks they do not live as long and are

more susceptible to salinity damage. The internal and external quality of their fruit is not as good, and mature fruit stored-on-tree declines in internal quality faster.

Navel oranges on Rough Lemon have higher levels of bitterness (limonin) and are more prone to stem-end rind breakdown.

SWEET ORANGE

Sweet Orange is the preferred stock for new citrus soils. New soils are defined as soils that may have previously grown stone fruits or vegetables but which have never grown citrus or vines.

Extra care and selection is needed in the nursery to produce even-sized, good quality trees. Trees on Sweet Orange have a longer productive life than trees on Rough Lemon stocks, and their mature fruit can be stored longer on the tree without a significant decline in quality.

Both Rough Lemon and sweet orange are susceptible to the soil-borne fungus disease *Phytophthora* and to nematodes, and are not recommended for replant soils — that is, soils in which citrus or vines have previously been grown.

(Continued on page 6)

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Before Planting a Citrus Orchard

(Continued from page 5)

PONCIRUS TRIFOLIATA

Trifoliata rootstocks are generally not recommended in SA, even though they have high tolerance to *Phytophthora* and citrus nematode. They are unsuitable for alkaline soils and have a low tolerance to salt.

CITRANGES

Carrizo and Troyer citrange stocks are recommended for replant situations because of their tolerance to both *Phytophthora* and citrus nematodes. They can also be used in new soil.

Citrange stocks give fruit of very good quality, but mature Valencia fruit cannot be stored on the tree for as long as when Sweet Orange stocks are used.

Extra care is needed in fertilizing trees on citrange stocks because they are less efficient in the uptake of elements such as zinc and manganese.

CLEOPATRA MANDARIN

Cleopatra stock has the advantage of a relatively shallow root system and can be used in shallower soils and still avoid problems of lime-induced chlorosis.

Fruit is of good quality, but tree size and sometimes fruit size is smaller. The smaller tree size has its advantages — the trees can be planted closer together and are cheaper to harvest. Where it is planned that every second tree is eventually to be removed, consider planting the temporary trees on "Cleo".

Emperor Mandarin performs as well as Cleopatra Mandarin when used as rootstocks for mandarin varieties.

SOUR ORANGE

Sour Orange can be considered for use as a stock for lemons because the lemon scion imparts tristeza tolerance to the plant. Sour Orange gives excellent fruit quality, is tolerant to *Phytophthora* and is recommended for lemons in replant soils.

Rough Lemon and Sweet Orange are often used as rootstocks for lemons in new soils because of the vigour and high yields they produce. At present, payments for processed fruit is made on a weight basis and Rough Lemon is likely to give the highest returns, but if fruit quality is considered, and if in future fruit is paid for on a solids basis, the highest returns would be most likely from Sweet Orange stocks.

Because most lemons are processed, Rough Lemon is often still used in new soils.

TYPE OF CITRUS AND VARIETY

When selecting the type and variety of citrus to plant, it is necessary to assess possible future returns by examining present and past returns. The choice of citrus type, variety and rootstock will also be influenced by the particular outlet for future fruit. If, for instance, the fresh fruit market is to be the main outlet, a greater emphasis on quality may be needed. It is likely, however, that in future processors will pay growers on the basis of the internal quality of the fruit, namely its total soluble solids content.

With uncertainties about future demand, growers may prefer to spread the risks by planting dual purpose varieties. For example, the Valencia orange can be sold fresh on the local and export market or be processed into juice products. A grower can spread marketing opportunities and the period for fruit harvesting by planting Navel oranges, which are harvested from May to September, and Valencias from August to April.

By planting oranges, grapefruit, lemons and mandarins, marketing opportunities are again increased, but so are the complexities of management.

Market returns for "easy peel" mandarins are currently very good and should encourage increased plantings of them in SA. Only 3.8 per cent of the State's citrus plantings are mandarins. Varieties worth considering include Imperial, which is easy to peel and ripens during winter when fewer fresh fruits are being marketed, and Kara, which produces good-sized fruit late in the season and can be stored for the Christmas market, exported or processed into juice products.

When established citrus growers select a particular variety, they give careful consideration to harvest time. Harvest should fit in with available labour and other resources.

To ensure high production and good fruit quality, buy only clones of proven

performance and known virus status. Trees should be bought from a reputable nursery. They should be clearly identified by variety and stock, and should be able to be planted with the bud union at least 150 mm above ground level to avoid diseases such as collar rot.

PLANTING DISTANCES

In the past, planting distances have often been adjusted to fit irrigation systems. In future, to maximize profits plantings should aim to maximize the volume of bearing foliage on a unit of soil in both the short and long term, while still allowing for normal orchard operations.

The volume of bearing foliage has two components:

- the canopy surface area determined by the number, size and position of the trees, and
- the depth of bearing foliage, largely determined by tree health.

Because production per unit area, tree vigour, fruit quality, cash flow and costs of production all need to be considered, the final choice of planting distances will vary according to circumstances. A general guide for new citrus soils is to plant trees 7.5x3.0m apart. The 7.5m row space allows trees to grow for about 20 years before hedging is necessary to maintain access to the orchard. The 3.0m planting within the row gives high production per unit area early in the life of the orchard.

When trees begin to touch within the row it is suggested that every temporary tree — that is, every second tree — be mechanically reduced in size to allow the permanent trees to develop at a maximum rate. When the cost of trimming temporary trees approaches the net return from their fruit, the trees should be removed. This gives a final 7.5x6.0m planting with individual free-standing trees and a very high bearing volume of foliage per hectare. If a hedgerow planting is preferred, 7.5x3.0m would remain a suitable initial and final planting distance, but the final area of bearing foliage would be less.

In replant soils where less vigour is expected, a 7.0x2.7m initial planting distance is recommended, even with the use of citrange stocks. This is followed by the gradual removal of every second tree as and when it begins touching and competing with adjacent trees.

ROW ORIENTATION

Because rows running north-south receive more sunlight, production per hectare from rows planted north-south is greater than from east-west rows.

Editor's Note: Although this article is primarily aimed at South Australian growers the information will be of interest to all growers.

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Orange Juice Imports Decline

Preliminary figures made available by the Australian Bureau of Statistics (ABS) indicate that imports of orange juice cleared for home consumption during the twelve months ended 30 July 1981 have totalled 2.5 million kilograms of Total Soluble Solids.

This is the equivalent of approximately 54,000 tonnes of fresh oranges and is less than half the record level of import clearances of orange juice recorded in 1979/80 when the equivalent tonnage of imports was 119,000 tonnes of fruit.

The reduced level of imports in the 1980/81 year can be attributed to the fact that a record 263,000 tonnes of oranges are estimated to have been processed during the 1980/81 season, compared with figures of 195,000 tonnes in 1977/78 and 1978/79 and 219,000 tonnes in 1979/80. Even allowing for the strong orange juice market growth factors, this record processing tonnage resulted in a temporary build up of stocks of Australian orange juice, thus reducing the import requirements with a view to bringing the supply/demand situation back into balance in 1981/82.

Comparative import clearance levels for orange juice in fresh fruit equivalent during recent years have been as follows:

1975/76	79,332 tonnes
1976/77	45,525 tonnes
1977/78	12,398 tonnes
1978/79	24,925 tonnes
1979/80	118,670 tonnes
1980/81	53,804 tonnes

Exports of orange juice during 1980/81 have totalled 4.4 million litres, equal to approximately 9,600 tonnes of oranges. This represents an increase of 67 per cent over the export figures for 1979/80 when the equivalent of 5,750 tonnes were exported in orange juice form.

Other preliminary statistics made available by ABS indicate that 41,000 kilograms of lemon oil were imported during 1980/81 at an average value of \$14.70 per kg. This compares with imports of 31,000 kgs in 1979/80 at an average value of \$32.73 per kg, and 17,800 kgs in 1978/79 at an average value of \$27.88 per kg.

Total imports of citrus oils in 1980/81 are recorded as 89,000 kgs and in addition to the lemon oil, comprise 30,000 kgs of orange oil, 16,500 kgs of lime oil and 1,500 kgs of other citrus oils.

Imports of marmalade jam dropped slightly in 1980/81 to 221,000 kilograms. The average value of the imports was \$2.06 per kilogram. In 1979/80 imports totalled 251,000 kgs at a value of \$1.91 per kg.

Exports of marmalade jam in 1980/81 exceeded the imports by 57,000 kgs and were recorded at 278,000 kgs at an average value of 86 cents per kilogram.

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Prior Lisbon Lemons on tri, Meyer Lemon,
Late Valencia Oranges on tri, Cumquat
Calomondin on tri \$7.50 in 200mm pots
(8" diameter), Cumquat Calomondin \$6.35,
Chinote Mandarin \$6.35, Meyer Lemon \$4.40.
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Report on Seasonal Conditions — Citrus July 1981

New South Wales

Seasonal conditions have generally been favourable for citrus although wet and cold conditions may increase rind blemish in some inland districts. Rain delayed the harvesting of navels, mandarins, lemons and grapefruit in these localities, while dry conditions favoured harvesting in coastal districts. The demand and market prices for citrus declined generally throughout the month.

The developing Valencia crop is sizing well and estimated to be greater than preliminary estimates in several districts.

MAITLAND

Tree health has improved following drought breaking rains. Harvesting of navels, lemons and grapefruit continued slowly due to declining prices.

GOSFORD

Dry conditions prevailed which favoured harvesting of navels. Market prices are only average and small fruit slow to clear. Some processing has commenced. Valencia development is good and maturity expected to be earlier than normal. Lemons have responded to recent rains and fruit size is good.

Due to the expected low demand by processors a surplus may occur with main crop lemons.

WINDSOR

Dry and cold conditions prevailed. The Navel harvest is well advanced but returns have declined during the month. The harvesting of Emperor mandarins and lemons continued. Valencia are sizing and colouring well, with good crop prospects.

NARROMINE

Mild temperatures and beneficial rain (67 mm) have improved prospects for the developing Valencia crop. Harvesting of navels, mandarins and grapefruit continued. Fruit quality and size is good.

MIA

Wet conditions have maintained winter soil moisture levels but delayed the harvesting of the light navel crop. This resulted in on farm prices being higher than normal early in the month (\$150 per tonne). They declined rapidly at the end of the month (\$110 per tonne). Valencia crops are developing well and will be greater than preliminary estimates.

MID MURRAY

Cold wet conditions are expected to increase rind blemish. Harvesting of navels commenced and met a strong demand. Fruit size is good. The 1980/81 Valencia crop was finally completed during the month. Red scale population are below the expected levels following heavy summer infestations.

LOWER MURRAY

Harvesting of navels continued during the month but was delayed by frequent wet days. The Sydney and Melbourne markets were generally over-supplied late in the month with a significant drop

in prices. As a result of the light crop harvesting is nearly 50% completed. Outlets for main crop lemons remain a problem due to reduced factory intakes and poor fresh market prices. Harvesting of Imperials was completed early in the month and Emperors are also near completion. The Ellendale mandarin crop is generally light but of good size and quality which will be harvested in mid July. Only small quantities of navels were exported (2,400 cartons).

—J. B. FORSYTH,

Principal Horticulturist (Citrus).

South Australia

WEATHER CONDITIONS

July has been wet and cold in most horticultural districts with above average rains.

Loxton recorded 63 mm of rain compared with a July average of 21.8 mm. Loxton's total for the year now stands at 151 mm, just short of the annual average of 158 mm.

The River Murray flow increased dramatically during July and locks have been opened for minor flood conditions. This has resulted in a sharp drop in salinity. With all storages now filling rapidly and substantial flooding in the tributaries, the coming irrigation season should be a good one.

During early July, rains had been barely sufficient to meet demands by citrus, and there was some concern at that stage that salt accumulation and dryness would lead to excessive salt uptake. However, the wet conditions in July led to the abandonment of irrigations for the month.

CITRUS HARVEST

Citrus tree health is now beginning to show the effects of the prolonged dry summer and early autumn, which this year has been accompanied by high salinity levels. A substantial leaf drop is expected and, in the worst affected trees, has already begun.

The heavy Valencia crop is not increasing in fruit size as expected, in spite of the rains. Much of the crop is too small for marketing at this stage, despite advanced maturity.

The Navel harvest is now well advanced, with much less fruit being left for late markets than usual. Fruit quality and size has been very good this season. The normal season will be completed weeks earlier than usual.

Local market prices for Navels have been satisfactory but sales have been rather slow. The export season, however, has been one of the busiest yet, with the usual major shipments made to New Zealand and South East Asia and for the first time a large shipment of 120,000 cases to Saudi Arabia.

Valencia packing for export began during the last week of July. Brix acid ratios averaged 5.9/L on July 21 which points to an early season. Packers have

received enquiries for local Valencias because of the shortage of Navels.

—S.A. "State of Agriculture"

Victoria

SUNRAYSIA

NAVEL ORANGES

Only 15% of crop left to harvest, with fruit drop commencing. Packers are having difficulty finding small to average size fruit to pack; a big quantity of large fruit is now being diverted for processing. Packers estimate this season's crop to be only about 30% of average. Both Leng and Washington navel oranges have been bringing good prices ranging from \$5.50 to \$9.00 per 30 litre carton and local growers have been reluctant to supply navels for export because of the high local price.

GRAPEFRUIT

Approximately 30% of crop is harvested. Sales are slow at between \$4-\$6 per case. Processors have indicated that although grapefruit juice is a slow moving and low profitline, they will be able to handle approximately 7,000 tonnes of fruit.

Fruit drop is commencing where stop-drop sprays have not been applied.

MANDARINS

The crop is generally about 50% below average and good demand is continuing for Dancy, Ellendale, Emperor and especially good quality late held Imperials.

There is considerable interest in reworking unpopular mandarin varieties such as Dancy, Cleopatra, Futrel and Emperor over to Early Imperial.

LEMONS

The local outlook for lemons is bad for this season. Local fresh fruit and processor outlets may not be able to handle the entire crop.

Fresh fruit sales are slow at between \$4-\$5 per case. The three local processors have estimated that they will be able to handle a total of 8,000 tonnes this year. With the crop approximately 50% below average, it is estimated that Sunraysia's lemon crop will be approximately 10,200 tonnes which means that 2,000t will have to be disposed of on fresh fruit markets.

One local processor is sending lemons to Griffith for processing.

GENERAL

Continued heavy rains have insured good leaching of salt from the soil but has also leached nitrogen fertilisers. When combined with the cold conditions this has led to a reduced uptake of nitrogen from the soil and as a result "winter yellows" has been obvious, particularly in young trees.

Growers applied either annual or split fertiliser dressing to trees.

Early harvested navels have been skirted and hedged.

—JOHN KENEZ

AUGUST, 1981

Barham Citrus Grower Develops Steel Bin

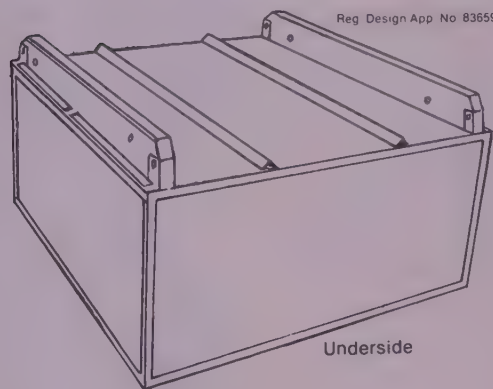
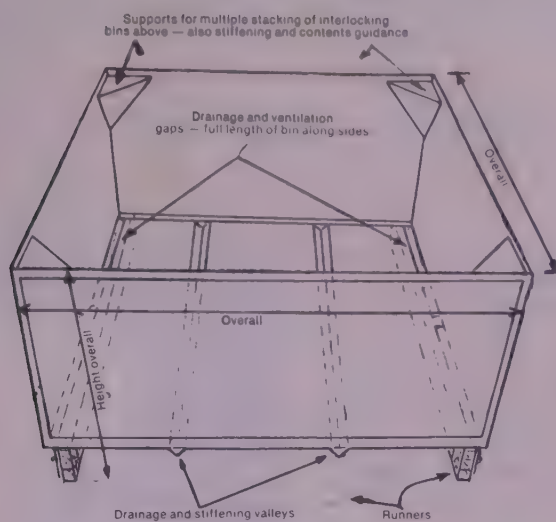
Barham (NSW) citrus grower and professional engineer Mr. Fife Gerrand, has successfully developed a steel bin for use in the citrus industry.

Like all citrus growers Mr. Gerrand has encountered the common problem of damaged fruit caused by wooden bins with protruding nails and other costly maintenance problems, and for this reason he has used his engineering knowledge to develop a steel bin which will last and be maintenance free. The bin has had continuous usage and extensive testing during the past 12 months and the results have been excellent.

Possibly the most important test carried out was the temperature test. The bins are painted white and in the hottest summer sun remained at exactly the same temperature as the wooden bins.

There are no protruding nails or points. The steel bins are welded constructions and emphasis in design has been placed on ventilation and drainage. The 20 bushel bin weighs 72 kg — similar to the weight of the wooden bin. The steel bin is much stronger and more durable. They are designed for interlocking stacking, preventing side slip and may be stacked 6 high full of fruit. The runners are red gum preventing white ant damage. As there is only sheet metal thickness in the

(Continued on page 13)



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Wonderful Orange Tree Bred in China

By LIU FEI

What some citrus growers have been dreaming for years has come true at last — an orange tree that bears fruit three times a year has been bred in China.

Ordinary orange trees fruit only once annually.

The wonderful orange tree first blossoms in March, then in June, and later in December. The oranges that set in March ripen in December, and those that form in June and December are harvested in March and June the following year. Flower buds, small green fruit and large, ripening ones can be seen dangling on the branches the year round.

The oranges of the new variety average 220 grams each. Almost seedless, they are of good eating qualities and the skin is thin and golden brown in colour.

The yearly yield of each tree is big — one and a half times that of ordinary trees. And it has a marked advantage in that it produces fruit at times when other trees are not bearing.

Chance played a part in breeding this new orange variety. In 1963, fruit growers at Huangmaozhai village of Baoshan county in the Southwest China subtropical province of Yunnan grafted on sour orange rootstocks cuttings of a navel variety brought from neighbouring Sichuan province. When the grafted plants grew up, they were amazed at finding that one of the trees bear fruit three times a year. Twigs from that tree were later grafted on local rootstocks, and they, too, yielded three crops a year. Today there are some 2,000 such trees in Baoshan county, which situated 1,200 metres above sea level, is endowed with a warm, bracing climate throughout the year.

The new orange variety is the result of "genetic mutation", according to scientists of the Citrus Institute under the Chinese Academy of Agricultural Sciences who went to study the Baoshan orange tree three months ago.

WHEN NEWS OF THE NEW VARIETY BECAME KNOWN, CITRUS GROWERS IN China flooded Baoshan with letters, asking for cuttings. The demand was so great that attempts at meeting it had nearly defoliated the few first grafted trees. Cuttings will be available in quantities in another three years, say Baoshan citrus growers.



Flower buds, small green fruit and large ripening ones dangling on the wonderful orange tree.



Fruit of the new variety.

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\$17.7m for Rural Adjustment In 1981-82

The Minister for Primary Industry, Mr. Peter Nixon, has announced decisions relating to the operation of the Rural Adjustment Scheme for 1981-82, following a meeting with State and Northern Territory Ministers responsible for its administration.

Mr. Nixon said that the Commonwealth will make available a total of \$17.7m for rural adjustment assistance in 1981-82.

Seventeen million dollars of this amount will be directed to assistance for Debt Reconstruction, Farm Build-up, Farm Improvement and Rehabilitation Assistance.

The \$17m was apportioned among the States on the basis of N.S.W. \$4.3m; Victoria \$3.8m; W.A. \$2.9m; Queensland \$2.7m; South Australia \$2.3m; Tasmania \$0.4m; Northern Territory \$0.6m.

However, if a State was able to demonstrate the need for additional assistance to provide for debt reconstruction for seriously drought affected producers, Mr. Nixon said that the Commonwealth would be prepared to view its case sympathetically.

Ministers also discussed the question of structured adjustment for the fishing industry. Mr. Nixon said that the Commonwealth supported in principle a fisheries adjustment scheme broadly in line with the existing Rural Adjustment Scheme.

Ministers reached agreement on the framework of the scheme for the fishing industry but a decision to proceed with its implementation was deferred pending resolution of some issues relating to funding.

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John Shearer Expands into Hort. Market



The latest M.B.P. orchard sprayer with large capacity 91 cm blower being exported to U.S.A. — now to be marketed by John Shearer Limited.

Following their recent expansion into Valley irrigation equipment, John Shearer (Holdings) Limited has announced a new market thrust into horticultural and water handling equipment.

The chairman of directors, Mr. A. M. Shearer, said the company would acquire the agricultural Division of M.B.P. (S.A.) Pty. Ltd., a subsidiary of McIlwraith-Davey Industries Limited.

The assets of the division include 2.7 hectares of land at Mile End, Adelaide, with extensive executive offices, warehouses and factory buildings, plant, machinery and stock.

Mr. Shearer said the acquisition, effective from July 1, 1981, would be utilised in John Shearer's expansion into horticultural and irrigation markets, and would provide continued employment for employees of the agricultural division of M.B.P.

The new premises will provide a base for John Shearer to assemble and distribute the Valley range of large scale irrigation equipment, and to manufacture and distribute horticultural and water handling equipment.

The foundation of M.B.P. (S.A.) Pty. Ltd., (formerly Metters Limited) dates back to 1891. The company became M.B.P. (S.A.) Pty. Ltd. in 1972 after a successful takeover bid by John McIlwraith Industries Limited.

The main activities of the Agricultural Division are in horticulture, including such products as orchard and vineyard sprayers, boom sprays, tree trimmers, tractor mounted forklifts, self-propelled orchard ladders, tree shakers, rotary mowers, flail choppers, wood chippers, spray pumps and a back-pack mister.

These products will be marketed under the John Shearer name from July 1, giving the company a tillage and seeding division, an irrigation division and a horticultural division. John Shearer is currently the leading Australian tillage and seeding machinery manufacturer, claiming 33% of the Australian tillage and seeding market, and has significant export markets.

It is the company's intention to develop and expand the existing range of horticultural equipment, as well as introduce linkage tillage and seeding equipment.

John Shearer has 200 franchise dealers marketing broadacre tillage and seeding machinery throughout Australia, and this will be expanded by 130 dealers associated with the Agricultural Division of M.B.P.

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Or will negotiate separately

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How to Minimise Your Tax

A new home studies kit on reducing farm taxes has been released by Marcus Oldham Farm Management College.

More than 3,000 farmers have used previous versions of the kit which costs \$39.50 and comes complete with cassette, study and reference material.

The author, Geelong chartered accountant, Geoff. Neilson, who specialises in rural clientele, says the kit's purpose is to enable farmers to be aware of their options for income tax savings through proper planning.

The material includes details of spreading income to avoid tax; the advantages of forming family trusts, partnerships and companies; a run-down of reductions and concessions sometimes ignored by farmers; and advice on timing expenditure to gain maximum tax benefits.

Case studies of tax situations are shown, and comparisons are made between taxes payable under different business structures.

There are also sections explaining income equalisation deposits, the new averaging system, depreciation, and many other provisions of taxation laws.

The director of External Studies at Marcus Oldham College, Alan Blackburn, says the kit is applicable to farmers in all States and has been carefully designed for ease of understanding. It is one of the most popular of the College's home study series.

"Many of Australia's farmers have been affected by drought over the last financial year. They must be particularly careful at this difficult time to ensure their tax planning is effective otherwise they risk worsening their situation when they can least afford it".

The kit is not a tax evasion scheme, rather it is a practical and up to date home study course, full of information on how to legally minimize your tax.

The kit is available by writing to: Marcus Oldham Farm Management College, Private Bag 116, Mail Centre, Geelong, Victoria, 3221, or by telephone (052) 433533.

BARHAM CITRUS GROWER DEVELOPS STEEL BIN

(Continued from page 9)

walls and bottom of the bins, there is a 7% space saving and the bins stack closer on trucks and can sit inside the lip of a truck tray.

Mr. Gerrand has applied for a registered design No. 83659 (see illustration).

The bins are being manufactured by Border Engineering at Barham NSW at a present price of under \$100 and further information can be obtained by contacting Phillip O'Neill (Phone (054) 532685).

EDITOR'S NOTE: Mr. Fife Gerrand was given a special Merit Award for Design for his Steel Citrus Bin at a function organised by the Australian Inventors Association in Sydney on 17 August.

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Apple and Pear Growers Spend \$470,000 on Local Promotions

The Australian Apple and Pear Corporation is spending a total of \$470,000 on promotions within Australia this year. This figure is \$100,000 more than previous domestic promotion budgets.

The 1981 allocation will mean the Corporation will use all of its domestic promotion reserve because levy revenues are not adequate to mount promotion campaigns of the size envisaged this year.

The main thrust of the campaign is in the eastern States, centred on Sydney, Melbourne, Brisbane and Newcastle, and features ten-second television commercials with similar themes being used in point of sale material.

Mechanical Harvesting of Citrus In Victoria

(Continued from page 4)

A new chemical technique for the quick detection of fruit damage of mechanically harvested fruits has been developed but requires some refinement to increase its sensitivity so that damaged fruits can be culled out at an early stage.

Indications are that mechanical harvesting of grapefruits and navel oranges can be commercially implemented while that of valencia oranges and, to a certain extent, lemons require more research — not so much on chemical loosening aspects but more on improvement of the shaker to achieve greater fruit removal.

5. PROPOSALS:

From discussions with overseas scientists it seems likely that the Irymple citrus mechanical harvesting system will develop into one of the principal citrus-harvesting systems available if sufficient funds are provided during the next 3 years.

5. (1) FRUIT COLLECTION:

The collection trailer requires further

development, and this will proceed during 1981. Present indications are that the quality of harvested fruit will be satisfactory. Work on this component of the harvester is progressing and has adequate funds.

5. (2) FRUIT REMOVAL:

Unfortunately efforts to find a suitable combination of abscissants has not succeeded to date providing funds can be obtained, it has been decided to initiate a project which aims to determine the optimum configuration for a rotating weight shaker. Objective studies of the design parameters of rotating weight shakers for citrus fruits have not been reported in the local or international literature. Requirements of the shaker are that it satisfactorily removes all mature fruit without reducing subsequent seasons crop by removal of juvenile fruitlets. The shaker should require 5 to 10 seconds to remove all fruit, and the design should minimize power requirement.

The shaker would be mounted on, and powered by, a 45 kw tractor which is available for this project at all times. The tradesmen of the Agricultural Engineering Centre workshop complex at Werribee, Victoria, would construct the shaker.

Evaluation of the shaker would be made in field trials at the Sunraysia Horticultural Research Institute, Irymple and in district groves. Trials would involve trees with a range of commercial rootstocks and budlines and measurement of fruit removal, effect on subsequent cropping, time to remove fruit, and power requirement would be made. The variables in shaker design would be correlated with these parameters. The experimental program would also be conducted at the Agricultural Engineering Centre Werribee, where an "artificial tree stump" would be instrumented to measure acceleration in the horizontal plane. This would be used to identify the effect of changes in shake patterns.

When the optimum combination of shaker parameters are known, details would be made available to the industry, machine manufacturers and local growers.

5. (3) ELIMINATING THE NEED FOR ABSCISSION CHEMICALS:

Proper manipulation of natural fruit loosening which related to maturity could lead to: (1) establishment of the optimum time to recover fruit without the use of an abscission chemical and (2) development of a practical criterion based on fruit maturity to determine when the fruit should be shaken from the tree with minimal loss due to natural fruit drop.

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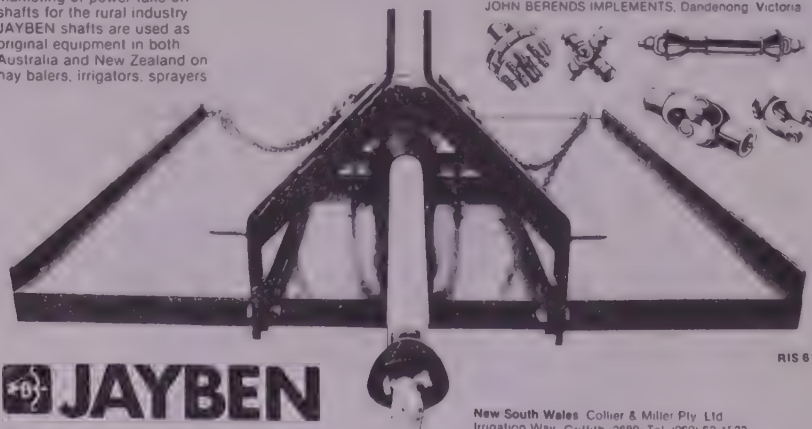
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Fresh Citrus Exports

MAY SUMMARY

AUSTRALIAN FRESH FRUIT EXPORTS BY STATES (TONNES)

	Qld.	NSW	Vic.*	S.A.	W.A.	Total
Grapefruit	2.9	4.0	—	1.2	0.1	8.2
Lemons	2.3	1.7	1.3	—	25.2	30.5
Mandarins	259.8	3.2	—	—	0.3	263.3
Oranges	69.3	14.9	29.9	—	—	114.1
	334.3	23.8	31.2	1.2	25.6	416.1

*—Includes NSW/Vic border areas.

AUSTRALIAN FRESH FRUIT EXPORTS BY DESTINATIONS (TONNES)

	Grapefruit	Lemons	Mandarins	Oranges	Total
PNG & Sol. Is.	4.0	4.0	18.4	84.4	110.8
Pacific Islands	0.2	0.2	0.4	10.6	11.4
Singapore	—	22.8	5.8	2.9	31.5
Malaysia	—	1.4	—	0.2	1.6
Brunei	—	—	0.4	—	.4
Philippines	3.8	1.0	—	1.4	6.2
Indonesia	0.1	1.0	0.1	—	1.2
Hong Kong	—	—	1.5	—	1.5
Bahrain	—	—	27.7	—	27.7
Kuwait	—	—	96.6	—	96.6
UAE	0.1	0.1	14.4	—	14.6
Canada	—	—	85.1	—	85.1
Belgium	—	—	—	14.6	14.6
Finland	—	—	12.9	—	12.9
	8.2	30.5	263.3	114.1	416.1

Irrigation Storages Report

JULY SUMMARY

STORAGES

	Megalitres	Week Ending 29-7-81 Megalitres
Dartmouth Reservoir	4,000,000	2,026,000
Hume Reservoir	3,038,000	2,204,000
Lake Victoria	680,000	658,000
Menindee Lakes	1,794,000	960,000
Burrinjuck	1,026,000	635,094
Blowering	1,628,000	1,107,040

WATER FLOWING TO SOUTH AUSTRALIA (River Murray)

Week ending 29-7-81	219,000
Monthly entitlement for July	109,000
Total for July to 29-7-81	636,000
Total for June	114,000

WATER QUALITY (River Murray)

(Average quality for week — total dissolved solids in parts per million)

	29-7-81	(30-7-80)
Swan Hill	281	197
Custon	175	157
Red Cliffs	223	181
Merbein	227	210
Lock 9	246	234
Lake Victoria	270	276
Merri	324	480
Vaikerie	360	564
Mannum	378	660
Murray Bridge	396	630

Extracts from River Murray Commission Reports and NSW Monthly Weather Review.

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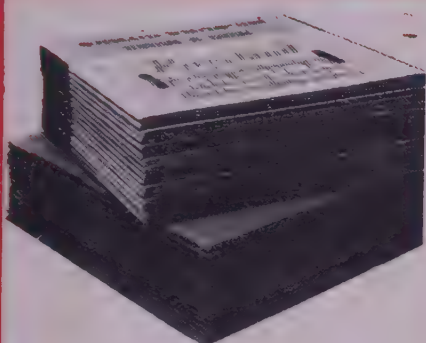
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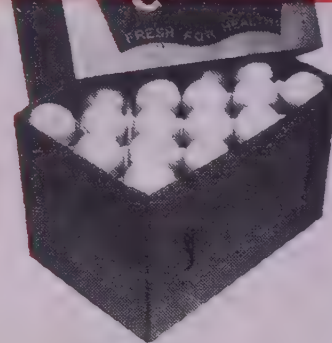
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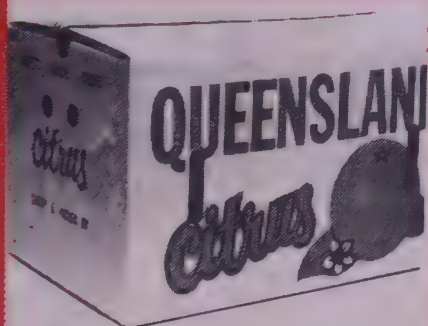
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The Australian Citrus Industry Council has decided that the present method of protecting the citrus industry against imports of orange and mandarin juices, i.e., by a variable tariff arrangements, is the only effective way of providing necessary protection to the industry.

The Council will present evidence to the IAC Inquiry, which is reviewing the tariff arrangement and inquiring into any necessary variations. The Council's evidence will seek a continuation of the system with an appropriate increase in the level of price support.

These decisions mean that the Industry; growers, processors and juice converters; will be speaking with one united voice in its approach to the IAC Inquiry and in any subsequent negotiations with the Commonwealth Government on the matter.

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Industry Doings

IAC SUB-COMMITTEE MEETS

The ACGF IAC Sub-committee met in Sydney on 25th August to start planning the Federation's evidence to the IAC Inquiry which will be held later this year, and from which will come recommendations to the Government on the level of tariff protection to apply to imports of orange and mandarin juices in the second half of 1982 and thereafter.

The dates and venues for the Inquiry have been set as follows:

November 3 Sydney

November 9 Adelaide

November 12 Melbourne

Mr. John Cosgrave, of Cosgrave Holt Pty. Ltd., a firm of Canberra Tariff Consultants, also attended the meeting at the invitation of ACGF President, Mr. Harry Walker.

Cosgrave Holt Pty. Ltd. have been engaged by Citrus Management Company Ltd., at Mildura to assist the Sunraysia Districts in the submission of relevant information to ACGF for inclusion in the grower evidence.

An IAC Background Paper is expected to be available to the industry before the end of September and following consideration of this paper, work will then start on the preparation of the ACGF evidence.

With a view to achieving a common industry policy on the approach to the Inquiry. The subject was listed for discussion at the annual meeting of the Australian Citrus Council held during September.

NEW SECRETARY FOR CENTRAL COAST BOARD

Miss Hildegard Wilkinson has been appointed to the position of secretary to

the Central Coast (NSW) Citrus Marketing Board at Gosford.

The appointment follows on the retirement of Mr. Fred Walpole and took effect as from 21 September.

Miss Wilkinson has been Mr. Walpole's private secretary for the past ten years and has a sound knowledge of the industry and the Central Coast in particular.

EXPORT NEGOTIATIONS WITH NEW ZEALAND

Negotiations for the sale of valencias to New Zealand in the 1981/82 season have taken place during September. A delegation from Fruit Distributors Ltd. visited Australia and met with the Directors of Riv-Sam Pty. Ltd. to discuss the 1981 valencia shipping program, as well as prices and quantities.

APPLE AND PEAR CORPORATION APPOINTS N.Z. MAN AS GENERAL MANAGER

Mr. Ken McGillen, of New Zealand, has been appointed General Manager of the Australian Apple and Pear Corporation, replacing Mr. Wilbur Oldman who has announced his retirement from the position.

For the past two years Mr. McGillen has been marketing manager (fresh fruit) of the N.Z. Apple and Pear Marketing Board and comes to the Corporation with extensive experience in the marketing of apples and pears.

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Florida's Slow Recovery from 1981 Freeze

Florida citrus, as expected, is recovering from the effects of the January freezes, but the consensus is that the recovery will not be nearly as rapid as the one which followed the 1977 disaster.

Within three years of that setback, the industry produced its all-time record crop — 283 million boxes — but observers think that it will be many years

before that level is reached again and some believe that it will never be matched.

There are many reasons for their pessimism, not the least of which has been the weather during the initial recovery period. The freeze came during a protracted dry spell and with only a few interruptions the dry weather has

persisted during the spring flush and the normal fruit setting period. During the critical month of April, some stations in the citrus belt recorded zero rainfall.

Sinkholes, areas where sandy land caves in as supporting underground water disappears, are always a drought phenomenon in Florida, but this year they have reached proportions which have drawn attention from the national news media. Less noticed, but equally important to the citrus producer, was the fact that levels in wells used for supplemental irrigation dropped to critical levels and many of the surface sources of water dried up completely.

TREES HARDER HIT

Another cause for concern is that it is becoming obvious that the 1981 freeze produced considerably more tree damage than the 1977 one. The freeze was not as widespread as in 1977, when damage was observable as far south as Homestead but this year, much of the Indian River district and the southern portion of the state escaped with only minor damage.

Where it was cold, however, it was very cold and the trees — many of them under moisture stress — are reflecting how hard they were hit. In general, Florida trees fall into three categories of appearance:

By far the largest group are those which now show no visible signs of damage and appear to be setting a near normal crop. This includes the entire Indian River district and most of the groves in the southern portion of Polk county and the other areas to the south.

The bulk of the Florida grapefruit acreage lies in this area and it is the site of most of the new large plantings of other varieties.

The second category of trees is the ones which were largely defoliated but suffered minor wood damage. These groves are easily spotted even at a distance because of the lighter color of the uniform young foliage and are prevalent in the central portion of the ridge, the heart of the orange belt.

Such groves represent a major question mark for those trying to anticipate next season's production. Those which have been irrigated regularly seem to have set a modest crop, but those with water stress problems have lost much of the meagre crop which they put on during their initial comeback.

The other category poses no questions in this season's crop picture and many of them will not figure in production for at least two seasons. These are the trees which were killed back to the trunk and scaffold limbs and which are currently receiving the most attention from owners working frantically.

This sort of damage is scattered through the entire northern part of the citrus belt, but the scatterings can be large ones. In the area directly south of

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VENDOR TERMS

LOT A:

53 acres with an attractive four bedroom brick veneer home, plus workman's cottage. This outstanding orchard is renowned for its high production. Plantings comprise approx. 25 acres planted to citrus, 12 acres of vines, plus 40 avocado pear trees, with vacant ground for growing cantaloups, tomatoes, rockmelons, etc.

The whole of the land is irrigated by modern overhead sprays driven by electric motors. Outbuildings include packing shed 98' x 64', cool room 14' x 10'. Plant includes Rapid Pack 14 bin grader, washer, dryer and waxing plant.

PRICE: \$230,000

LOT B:

Lot B is known as the northern block. There is an old style three bedroom home (some renovations required). Packing shed, garage and workshop.

LAND DEVELOPMENT:

High red undulating sandy loam with proven suitability for horticulture and viticulture. There are 10 acres of citrus under permanent spray, 20 acres of vines irrigated by pipes and risers, irrigation supplied by electric motor and Kelly & Lewis pump.

PLANT: — MF 240 tractor, undervine weeder, airblast spray, 14 plate disc, toolbar and shovels, 11 bin citrus grader.

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AHGC Concerned at Delay with Plant Variety Rights Legislation

The Australian Horticultural Growers Council has advised the Federal Minister for Primary Industry, Mr. Nixon, and the State Ministers of Agriculture and Primary Industries of its concern over the continued delay in implementing a Plant Variety Rights scheme for Australia.

The Plant Variety Rights Bill was introduced into the Commonwealth Parliament on May 7, 1981 and has been allowed to lie on the table of the house since that time to enable public debate to take place.

The Australian Agricultural Council considered the matter at a meeting in Darwin in August and after that meeting Mr. Nixon announced that more time was needed for public debate on the matter and a number of issues in the proposed legislation required further consideration.

The Horticultural Growers Council considers there is a danger that current reservations by some of the States and the strong lobby campaign by environmentalist groups etc., could prevent the passing of the legislation. This would be to the detriment of the Australian horticultural industry.

The council has re-affirmed its strong support for the proposed legislation and has requested that the matter be

proceeded with at the earliest possible time.

Consideration of the Plant Variety Rights legislation took place at a meeting of the AHGC Executive Committee held in Sydney during August.

AHGC TO SEEK NFF SUPPORT FOR MURRAY /DARLING RIVER AUTHORITY

Another matter discussed by the AHGC Executive Committee was the question of control of water quality in the River Murray and its tributaries.

The Council decided to seek the support of the National Farmers Federation to a proposal that the Commonwealth Government, and the State Governments of New South Wales, Victoria, Queensland and South Australia, be requested to develop, as a matter of urgency, the necessary Commonwealth and complementary State legislation to establish a Murray/Darling River Authority to

totally manage the Murray/Darling River Systems.

Included in the proposal is the possibility of a Commonwealth Referendum on the issue, if it is considered necessary to amend the Constitution, in order to provide the necessary powers to the proposed Authority.

DATE SET FOR ANNUAL MEETING

The AHGC Annual Meeting will be held in Sydney on Tuesday, 24 November 1981.

Recipe of the Month

LEMON CUP-CAKE

1 1/4 cups S.R. Flour, 2/3 cup sugar, 1/3 cup butter or margarine, 2 eggs, 1/2 teaspoon finely grated lemon rind, 3-4 tbsls lemon juice, 1/4 teasp. salt.

Cream butter and sugar, then add the lemon rind and juice. Separate eggs and add the beaten egg-yolks to the mixture. Add the flour sifted with a good pinch of salt; fold in the stiffly-beaten egg-white. Bake in patty cases for 25 minutes at 175°C. When cool, cut the cakes in half and join with lemon spread. Sprinkle with sifted icing sugar.

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Use of the Refractometer to Estimate the Soluble Solids Content of Fresh Fruit

By Jane Harman and Chris Watkins, Division of Horticulture and Processing,
Department of Scientific and Industrial Research, New Zealand

Fruits contain many compounds which are soluble in water; for example sugars, acids, vitamin C, amino acids and some pectins. These soluble compounds form the soluble solids content of the fruit.

In most ripe fruits sugar forms the main component of soluble solids. Since the amount of sugar in fruits usually increases as the fruit matures and ripens, the soluble solids content of the fruit can be a useful index of its maturity and stage of ripeness.

To measure accurately the total soluble solids in fruit requires long tedious methods. However, there are two commonly used, less difficult methods to estimate soluble solids in fruit juices. One is to measure the specific gravity of the juice using a hydrometer; the second and most popular is to measure the refractive index of the juice using a refractometer. It is the second method that will be outlined here.

Most pocket refractometers give readings in % sucrose or degrees Brix. They have been calibrated assuming that the only compound in the solution being

tested is sucrose. However, other compounds such as acids may be present and may cause the refractometer to give an estimate of total soluble solids which is lower or higher than the true content. The amount of these compounds in fruit is very small and the effects of individual acids, vitamins and pectins on the refractive index of the juice often cancel each other out. However, in cases where a non-sugar component occurs in significant amounts it may be necessary to make a correction to the refractometer reading to give an estimate of per cent total soluble solids (% SS). For example, in citrus the amount of citric acid present may be great enough to cause errors to the refractometer % SS reading. If the amount of citric acid present is known, correction tables are available to calculate total soluble solids content from the refractometer reading. Such a 'corrected' refractometer soluble solids reading is known as the 'Brix value'.

In most fruit, e.g. apple, pear, kiwifruit, a good estimate of % soluble solids content can be made from direct, un-

corrected refractometer readings which are expressed as degrees Brix (°B).

TYPES OF REFRACTOMETER

The type of refractometer used in the fruit industry for quality or maturity testing is a small portable hand or pocket refractometer. These generally have a °B range of 0-20 or 0-32% in 0.2 or 0.5% graduations.

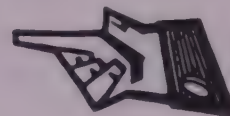
When choosing a refractometer it is important that:

- (1) The scale is easy to read.
- (2) There is good contrast between the light and dark portions of the field of view and that the demarcation line is fine and distinct.
- (3) The instrument can be easily and accurately calibrated but does not go out of adjustment easily.
- (4) Some refractometers have an in-built mechanism for temperature compensation which is useful for accurate measurements in the field.

(Continued on page 12)



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Quality Test Trials on Export Citrus Cartons

The Queensland Citrus Exporters Committee has recently been involved in important carton strength trials on the C 25 and C 21 export citrus cartons.

The project was co-ordinated by Mr. Jack Blick on behalf of the committee and conducted by Mr. Dick Schoorl at the Redlands Horticultural Research Station in Queensland.

Mr. Jack Parr, chairman of the Queensland Citrus Exporters' Committee has commended Mr. Schoorl and Mr. Blick for their efforts on behalf of the Queensland citrus export industry in ensuring that the C25(4/5) and C21 (2/5) export cartons have the stacking strength required to minimise and, if possible, eliminate pressure damage to citrus fruits during shipment to world markets.

He said it was vital that every factor influencing overseas out-turn quality was carefully checked. Cartons represented an item of major importance in which the carton manufacturers held a stake as well as the exporting growers and shippers. In Queensland alone, the sales of export citrus cartons were over \$A600,000 a season.

The level of shipping freights paid by the Queensland citrus export industry, at close to \$A3,000,000 a season, also gave shipowners a substantial interest in seeing the export trade maintained and expanded by high quality out-turns.

In his report to the Queensland Citrus Exporters' Committee Mr. Schoorl said that wax dipped citrus export carton inners had been specifically designed to withstand high humidity conditions in cool storage during transit overseas. For that reason, tests on cartons have to imitate these conditions. Tables 1 and 2 in this report have been prepared to show the test results where the waxed export cartons have been in cool storage for five days and allowed to warm up for 5 to 10 minutes. The warm up period, Mr. Schoorl explained, is to simulate unloading conditions of the container.

Cartons tested to date have been supplied partly by the fibreboard converters in Queensland and partly by citrus export packers. In Tables 1 and 2 the origins of the cartons tested have been identified by the letters A, B, C, and D. The results in Table 1 for C25 cartons show satisfactory results for the drop in Newtons of compression force from air temperature average compression 9 500 N to coolroom temperature 7 700 i.e., about a 20% drop.

The coolroom Newtons (see Table 1) of 9 000 for B and 9 500 for C were very good. The lack of strength for B, 8 800 air temperature and 6 160 coolroom, was due to the glue lap joint being poorly aligned. Mr. Schoorl advises growers to carefully check this feature as the cartons, which were poorly manufactured in this way, were 20% down in strength. The other results for C25 cartons tested were quite satisfactory in overall compression strength and loss after cool storage. Previous tests of wax dipped celery and lettuce cartons revealed a loss of compression tests from 6

000 Newtons at air temperature to 3 100 Newtons after cool storage.

The C21 carton results in Table 2 show wax dipped boxes are approximately three times as strong as unwaxed cartons. The C25 cartons that are only wax coated

drop to one third of their original strength after cool storage. For soft fruit, like mandarins, the unwaxed cartons would be unsatisfactory in cool storage transport, particularly for export markets.

(Continued on page 12)

TABLE 1

Compression test of C25 wax dipped cartons (4/5 bushel) at air temperature and after cool storage of 5 days

Carton Source	Air Temperature	Cool Room
A	9600	7540
B	9600	7700
B	9300	7800
B	—	9000*
B	8800	6160†
C	—	9500*
C (inner wax coated only)	7000	2400

Note: *—Only two samples, so no air temperature test.

†—Glue lap joint poorly aligned by manufacturer.

TABLE 2

Compression test of C21 wax dipped cartons (2/5 bushel) at air temperature and after cool storage of 5 days

Carton Source	Air Temperature	Cool Room
A	—	5100
D	—	4850
Compression test of unwaxed inners at air temperature		
A	1770	
D	1633	

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NEWS FROM HERE AND THERE

INDUSTRIAL PROBLEMS DISRUPT CITRUS EXPORTS

There have been serious holdups with the citrus export shipping programme during the past month because of industrial action. The transport workers strike in particular provided Riv-Sam Pty. Ltd. and the South Australian packers with a major headache in supplying the big order of 130,000 cases for shipment to Saudi Arabia.

As it was, the shipment finally left 10,000 cases short and considerably delayed.

The record shipment was negotiated on the basis of the full quantity being supplied and a specified arrival period.

This has been a most unfortunate and costly affair for the S.A. citrus industry, and the Saudi Arabian shipment fiasco could threaten the possibility of future repeat business.

Trade Unions would enhance their position in the community by recognising the necessity for perishable commodities, such as citrus fruits being exported to overseas countries, to be given exemption from the effects of such industrial action, which could completely destroy future opportunities to maintain export markets.

* * *

FRUIT FLY SCARE IN FLORIDA

Aerial pesticide spraying has been carried out during August in the Tallahassee area of Florida following the finding of Mediterranean fruit fly. An infestation would threaten the State's \$A3,500 million a year citrus industry.

The finding follows closely on outbreaks which have recently occurred in parts of California.

* * *

BFJ GOES FROM STRENGTH TO STRENGTH

Berri Fruit Juices Co-operative Ltd., has increased its sales from \$7.5 million in 1971 to an estimated \$60 million this year. This average increase of 80 per cent a year is about four times faster than the growth in the total fruit juice market.

In the rapidly expanding chilled juice segment, Berri's sales have increased by 30 per cent in the past twelve months. This compares with a total market growth of 24 per cent.

Advertising with the theme "Solar Energy You Can Drink" plus excellent product quality, have been key factors in the sales success.

The Co-operative has chosen to concentrate on fruit juices rather than fruit juice drinks. In 1981, Berri's sales in this range are 76 per cent ahead of 1980.

The market for canned fruit juices is tending to decline in volume but sales of Berri are holding steady and its share is increasing.

Berri expects the total market for

chilled and pasteurised juices will continue to grow and the canned juice segment will remain static.

—Retail World

* * *

SPAIN'S CITRUS EXPORTS DOWN

As a result of a cold wave and gales in late 1980, Spain's citrus exports may fall from the earlier forecast of 1.7 million tonnes to a range of 1.4 million to 1.5 million tonnes in 1980/81. Trade sources are expecting export projections to be lowered by 200,000 tonnes for oranges, 30,000-50,000 tonnes for lemons, and 25,000-50,000 tonnes for mandarins. The country's citrus exports since the beginning of the 1980/81 season in late September through April 22 were running 4 per cent below the year earlier level. The frost reportedly caused little or no damage to citrus trees that were budding earlier than usual, and barring further adverse weather, Spain's 1981/82 crop should be normal.

—USDA "Foreign Agriculture"

* * *

HORTICULTURAL EXPORTERS COUNCIL FORMED IN NEW ZEALAND

A Horticultural Exporters Council has been established in New Zealand. The Council has an executive of seven representing the different product groups.

The objects of the Council are:

- To promote the orderly development of exports of N.Z. horticultural products.

- To represent the interests of members and the horticultural industry in dealings with both governmental and non-governmental bodies within and outside New Zealand.

- To liaise and co-operate with other bodies within or outside New Zealand having similar or complementary interest or objects.

- To collect and disseminate information in relation to the exporting of horticultural products to the industry.

- To establish and promote in collaboration with other bodies within or outside New Zealand means of ensuring that proper standards are maintained with respect to the export of horticultural products.

- To cultivate reciprocal relations with persons, associations or organisations having objects similar to the Council in other countries.

- To do such things that may be for the benefit of members and the horticultural export industry generally, e.g. product, promotion, transport requirements.

—"N.Z. Fruit and Produce"

ULV SPRAYING

South Australian citrus growers have been given a preview of the "Mister Miser",

Waikerie Co-operative Producers' exciting new idea in citrus spraying.

The Ultra-Low Volume spray plant (ULV) is in the final stages of development and is considered to be a world leader in the design of its type, using a brand new concept aimed at massively reducing the amount of chemicals used for growing horticultural crops.

The purpose of the preview was to allow constructive comment on the plant prior to it being sold commercially.

An indication of its performance can be gained from the recommendations for nutrient sprays of zinc and manganese on citrus. The hand book states that "Commercial liquid formulations containing both nutrients are recommended and can be used without dilution (neat) if desired". Suggested speed is at 8 km/hour (5 mph) using an output of 0.25 litres/head/min which totals 15 litres (3.33 gals) per hectare. Liquid formulations of chemicals are desired; head configuration and calibration must be carefully calculated to achieve maximum results.

Another of the big cost advantages was the lack of power needed to run the ULV plant, (only a light tractor was used in the demonstration) and simply mounted on a normal three point linkage with power take off speed of 540 rpm, resulted in an atomiser speed of about 11,110 rpm. Excellent spray coverage rates for red scale spraying were achieved with the six head machine on trees 16 feet and over. A four head machine could be used on trees less than 16 feet tall and for the application of nutrient sprays, three or four heads would be sufficient. The price suggested by Waikerie Producers should ensure keen interest among buyers of spray machines.

—Murray Pioneer
"Citrus Segments"

NSW TO PROMOTE "FRESH IS BEST"

The NSW Minister of Agriculture, Mr. Jack Hallam, has announced a major new initiative, with the appointment of a Primary Products Promotions Officer by the NSW Department of Agriculture to provide information on fresh food to both city and country areas. The aim of the venture is to promote consumer awareness of the importance of fresh food and the role of the rural community in providing that food.

The main areas of activity will be:

- preparing and presenting nutritional information on fresh food and optimum use of products.

- presenting consumer marketing information, including "good fresh food buys" on television, radio and in the press.

(Continued on page 9)

News from Here and There

(Continued from page 8)

• complementing the promotional activities of other organisations, particularly those associated with the recently formed Primary Industry Promotion Council. This Council represents such diverse groups as meat and livestock producers, fruit and vegetable growers, dairy farmers and the fishing industry.

The new Promotion Officer is Ms. Courtney Clark, a qualified home economics teacher who has had extensive experience in radio and television.

Her immediate programme is to provide consumers with information on the availability, price and quality of fresh produce, together with ideas on preparation and storage of fruit, vegetables, meat and fish. Information will be conveyed through a recorded telephone message facility (to be updated twice weekly), a segment on commercial television, and a regular column in the press.

Ms. Clark will also be developing educational information on fresh foods for use in schools.

—NSW Agricultural Gazette

* * *

CITRUS WASTE PROJECT AT GRIFFITH

A major project which will use rice hulls and citrus pulp and peel is about to be undertaken by the Ricegrowers Co-operative Mills Ltd. at Griffith.

With more than 130,000 tonnes of rice hulls generated annually through the milling process, the project will be another step in overcoming the rice industry's giant headache of hull disposal.

Basically the idea will be to use rice hulls fueled combustion units to dehydrate citrus waste and provide ingredients for use in the Coprice Feeds stockfeed plant and also produce rice hull ash which has a wide variety of industrial uses.

Dried citrus pulp is rated as an equivalent to barley when fed to ruminants.

Costing \$950,000 the project involves the installation of a rice hull furnace and dehydration unit at the recently purchased Penfolds Winery at Griffith.

The dehydration of citrus waste is practised extensively in the USA, as well as in Victoria and South Australia. However, rising fuel costs have made the Australian projects marginal as far as economics are concerned.

Production of citrus juices on the Murrumbidgee Irrigation Area results in about 26,000 tonnes of pulp coming from Griffith and 12,000 tonnes from Leeton.

—Area News, Griffith

SEPTEMBER, 1981

Citrus Growers!

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Report on Seasonal Conditions

VICTORIA

ORANGES

Harvesting of the Leng and Washington navel orange crop has almost been completed with the exception of the crop of a few growers who specialize in the late navel market. Lanes late navel oranges continue to be harvested. The first of this season's Valencia crop has started to be harvested.

In the Goulburn Valley the harvest of the light Navel orange crop is progressing well with prices at \$6-\$7 per carton.

GRAPEFRUIT

Harvesting continues, with natural fruit drop increasing.

MANDARINS

The harvest of a small mandarin crop has almost been completed. In the Goulburn Valley there were a few Ellendale mandarins still to be harvested by the end of August.

LEMONS

Reduced intake of lemons for processing and delays on the wharf for export fruit have made it almost certain that some of this season's lemon crop will not be harvested.

A good sized summer lemon crop is showing on some properties as a result of last season's good weather condition at setting.

GENERAL

In Sunraysia high river levels have considerably reduced river salinity levels. Floods have purged many salty billabongs, which are the sole source of water for many private divertors. Even though winter rains were above average, it appears that in some areas they have been inadequate to provide sufficient leaching.

In some situations high water tables and waterlogging caused increased tree deaths from *Phytophthora citrophthora*.

Interest has significantly increased in reworking lemons over to Valencia, Lanes Late Navel orange and mandarin varieties. Growers have shown increasing interest in use of herbicides and also in applying nutrients with irrigation.

—J. Kenez, Vic. Dept. of Agriculture

NEW SOUTH WALES

Mild temperatures continued with generally dry conditions prevailing in coastal districts but wetter conditions inland.

Harvesting of the light navel crop is nearing completion in all districts. Market demand and prices have been satisfactory. The Valencia crop is greater than earlier estimates, maturing earlier than normal and harvesting has commenced in several districts. Lemons

and grapefruit are being harvested slowly due to a weak demand by processors and the fresh market. Limited quantities of Valencia, Ellendales and lemons were exported during the month.

MAITLAND

Dry mild conditions continued with bud movement two or three weeks earlier than normal. Harvesting of navels, lemons and mandarins continued with satisfactory market returns while the harvesting of Valencia and Seminole tangelos will commence in September.

GOSFORD

Dry conditions prevailed with only 4.9 mm of rain. Navel harvesting continued and is 75% completed with fruit quality very satisfactory. Lemon harvesting however progressed slowly and with reduced intakes by processors up to 30% of the main crop could be lost. Valentias are sizing well and of good quality.

WINDSOR

Very dry and windy conditions prevailed. The navel harvest has been completed, while Valentias commenced in mid August some three weeks earlier than normal.

NARROMINE

Harvesting of navels is almost completed while the Valencia crop is expected to be 25% below normal.

(Continued on page 11)



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IAC Inquiry on Nitrogenous Fertilizer Subsidy

(Joint Statement by the Hon. P. J. Nixon, M.P., Minister for Primary Industry; and J. C. Moore, M.P., Minister for Business and Consumer Affairs).

The Minister for Primary Industry, Mr. Peter Nixon, and the Minister for Business and Consumer Affairs, Mr. John Moore, have announced that the reporting date of the Industries Assistance Commission inquiry on the nitrogenous fertilizers subsidy, which is currently 16 October 1981, would be extended to coincide with the phosphatic fertilizers inquiry reporting date which is 28 February 1982.

This action followed industry representations in support of a common reporting date and also took into account the Commission's view that the issues involved in the two references were sufficiently similar as to make it desirable to report on them jointly. The Commission recently held joint hearings on both references.

The Ministers also announced that the existing nitrogenous fertilizers subsidy legislation would be extended for a further six months to 30 June 1982 to coincide with the expiry date of the phosphatic fertilizers legislation. This would allow the Government adequate time to announce its decision on assistance for both fertilizers and introduce any resulting legislation before existing legislation expires.

In response to the Government's request for advice on continuation of the Nitrogenous Fertilizers Subsidy after December 31, 1981, the Commission recommended the continuation of current assistance arrangements until 30 June 1982 pending the Government's decision on the Commission's final report.

Report on Seasonal Conditions—Citrus

(Continued from page 10)

MIA

Due to wet conditions the irrigation season will not commence until the 10th September about one month later than the previous year. The navel crop is 50% below the previous crop and nearing completion. Although fruit quality is deteriorating, high prices are still being received and resulted in reduced availability of navels for processing. Although Valencias passed maturity tests earlier than normal poor fruit size is expected to delay harvesting. The overall Valencia crop is greater than earlier estimates. Only small quantities of grapefruit and lemons have been harvested due to reduced processing requirements.

—J. B. Forsyth,
Principal Horticulturist (Citrus)

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USE OF THE REFRACTOMETER

(Continued from page 6)

CALIBRATION OF THE REFRACTOMETER

Refractometer readings of °B alter slightly with temperature. The instrument is calibrated to be used at 20°C and thus ideally both the instrument and the fruit juice should be at this temperature.

Temperature variations 2-3°C either side of 20°C have little significant effect on °B readings. If measurements have to be taken in the field on very hot or cold days, correction factors, generally given in tables supplied with the instrument, should be applied. If these are not available the instrument should be calibrated with water or sucrose solutions at the ambient temperature.

To calibrate the refractometer place a few drops of distilled or boiled water on the prism surface. Close the prism cover, ensuring that no air bubbles are trapped in the water film, then point the refractometer toward a light source. A circular field is seen through the eye-piece with a vertical scale to one side marked in divisions of 0.2 or 0.5% soluble solids. With liquid on the prism the field will be divided into light and dark portions. The point at which the demarcation line between these portions crosses the vertical scale gives the °B reading or estimate of % SS. With distilled or boiled water this reading should be 0%. The line can be adjusted on the vertical scale by screws above or below the prism box. Having calibrated the refractometer with water, it is also available to check its accuracy at higher °B using *freshly made* sucrose solutions of known concentration of sucrose, e.g. 12% w/v sucrose (12g sucrose in 88 ml distilled water).

SELECTION OF FRUIT FOR SAMPLING

The fruit sample used to estimate maturity or quality of a crop should be composed of fruit harvested from at least five trees or vines distributed throughout each orchard block. (These trees should be representative of the block in age, vigour and health). The fruit sample should consist of at least 10, and

preferably 15-20 fruit, i.e. 2-4 fruit per tree. These fruit should be representative of the crop being tested. Sun scalded or damaged fruit must be avoided. In winter, fruit should be harvested in late morning or early afternoon to ensure it has reached ambient temperatures. The fruit should also be dry when sampled to prevent outside water diluting the refractometer reading.

As soon as possible after harvest, fruit should be moved out of direct sunlight. Measurements should be made in a shed or room, where possible.

PREPARATION OF SAMPLE FOR % SS ESTIMATION

There are two methods of estimating % ss content of a fruit sample.

(1) All fruit can be mixed and macerated in a blender. After the juice is filtered from the pulp a small sample is placed on the refractometer prism for estimation of % ss.

or

(2) Measurements of % ss for individual fruit in the sample are made separately and the average value for the sample calculated. The % ss content of juice of fruit varies within fruit depending on how fruit ripen, e.g. in apple the core area may have a higher sugar content than cortex tissue. Therefore to obtain an accurate % ss value for whole fruit the juice samples must be collected correctly. This procedure depends on the type of fruit being analysed; some example procedures are suggested as follows:

APPLE, PEARS, PERSIMMONS, CITRUS, STONEFRUIT

Cut wedge-shaped segments from opposite sides of fruit. Express a drop of juice from each segment on to the refractometer prism and read. If flesh firmness is also being tested the juice droplet from the end of the penetrometer may be used.

Where the % ss content of harvested or stored fruit is required, the fruit selected should be representative of the whole sample and collected from several bins or trays. Cool-stored fruit should be kept for 12-24 hours to reach room temperature.

Enough fruit juice should be placed on the prism surface so that a thin film of juice covers the prism, with no air bubbles, when the prism cover is closed. Care must be taken that no seeds, hairs or other coarse material are trapped in the prism box, to avoid pitting of the prism surface. The % ss or °B of the juice should be read as quickly as possible.

If the demarcation line on the refractometer scale is indistinct this could be due to:

(1) Large air bubbles trapped in the film of juice. A larger amount of juice may be required to ensure that the prism surface is well covered.

(2) Starch granules in the juice. Many unripe fruit contain starch grains

which will cause scattering of light passing through the prism. In this case the fruit juice should be filtered through fine filter paper (Whatman No. 42) to remove starch.

(3) Moisture entering the optical system of the refractometer. The refractometer should be dried at 30-40°C.

The prism surface should be cleaned with water and dried with a soft tissue between each reading.

SUMMARY

(1) Calibrate the refractometer before use with distilled water. Check accuracy if possible using freshly prepared sucrose solutions of known concentration.

(2) Wipe surface of prism clean with soft paper tissue.

(3) Collect a fruit sample representative of orchard block or storage bins. Ensure fruit and refractometer are about 20 °C and that fruit surface is dry. Avoid damaged fruit.

(4) Remove fruit from direct sunlight and

either

(a) Mix and blend sample, filter juice and place drops onto prism;

or

(b) take two segments from opposite sides or ends of the fruit. Squeeze one or two drops of juice from each segment onto refractometer and read. Repeat for each fruit in sample. To obtain average value of % ss add the values for all fruit in sample and divide by number of fruit in sample.

(5) Carefully wipe prism surface with paper tissue between each reading. After use wash refractometer with water and dry well.

—THE ORCHADIST OF
NEW ZEALAND

Quality Test Trials

(Continued from page 7)

CONCLUSIONS

Mr. Dick Schoorl has concluded that there are many factors which affect wax dipped carton strength and that citrus growers need a reliable specification to provide the carton strength to protect the fruit from the pressure of cartons stacked above them. If this is achieved for export citrus cartons then, should outturn problems arise, the knowledge that the cartons are not at fault means that the search for correction of the fault can be made elsewhere. Secondly, growers should check the dimensions of the export cartons to ensure they are correct for stowing in containers.

Internal dimensions should be —

C25 length 445 mm, width 260 mm, depth 245 mm

C21 length 370 mm, width 230 mm, depth 175 mm.

Compression force in Newtons
(10n = 1 kg)

CITRUS TREES FOR SALE

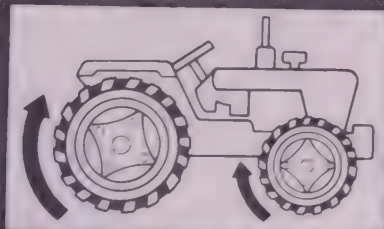
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Several varieties, including Valencias and Washington Navels for Spring planting. These trees are budded to Citrange and Trifoliata stocks. All propagating material is from Government sources.



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*Manufacturer's estimate.

Tractor illustrated is fitted with R.O.P.S., optional at extra cost



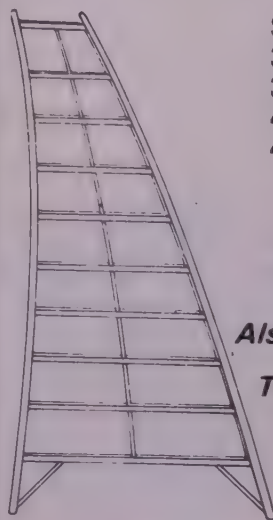
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Irrigation Storages Report

AUGUST SUMMARY

STORAGES

	Capacity Megalitres	Week Ending 26-8-81 Megalitres
Hume Reservoir	3,038,000	2,864,000
Lake Victoria	680,000	670,000
Dartmouth Reservoir	4,000,000	2,374,000
Menindee Lakes	1,794,000	1,135,000
Burrinjuck	1,026,000	949,050
Blowering	1,628,000	1,416,360

WATER FLOWING TO SOUTH AUSTRALIA (River Murray)

Week ending 26-8-81	333,000
Monthly entitlement for August	124,000
Total for August to 26-8-81	1,157,000
Total for July	707,000

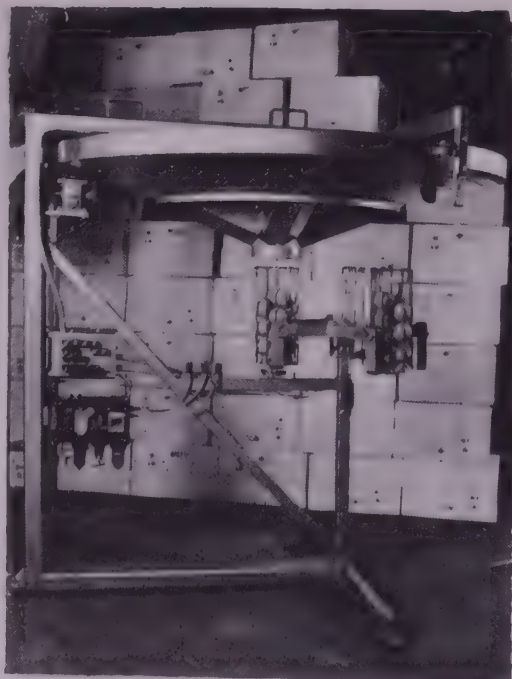
WATER QUALITY (River Murray)

(Average quality for week — total dissolved solids in parts per million)

	26-8-81	(27-8-80)
Swan Hill	271	147
Euston	124	108
Red Cliffs	173	132
Merbein	191	142
Lock 9	192	168
Lake Victoria	258	394
Berri	252	264
Waikerie	342	390
Mannum	318	570
Murray Bridge	288	600

Extracts from River Murray Commission Reports and NSW Monthly Weather Review.

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Florida's Slow Recovery from 1981 Freeze

(Continued from page 4)

Leesburg, it is possible to drive for as much as 20 miles without spotting an undamaged grove.

Problems of all sorts continue to crop up in damaged trees. Growers are reporting heavier losses from blight in the post-freeze period, a phenomenon which was to be expected since additional stress is frequently fatal to trees weakened by any disease.

Some also report that trees with heavy populations of snow scale were slow in recovering and that late dieback was occurring in these groves.

Recovery seemed to be in direct proportion to the availability of water. In the areas of tree damage, adjacent groves and even side-by-side rows showed less freeze damage where they had been irrigated prior to the freeze or were watered soon after.

WATER KEY FACTOR

Trees which have received regular irrigation during the drought are also coming back strong and many are setting a crop while adjacent blocks without water have had heavy fruit drop and are suffering from still more die-back.

Pruning and re-working of groves started early in the spring out of necessity. Growers would prefer to wait as long as possible but the availability of mechanical hedging and topping machinery is limited and some would have had to wait more than a year if they had not started work on schedule.

In the badly burned belt, tree trimming is going at full tilt and will probably continue well into the summer. The approach to re-working trees is as varied as the type of damage and the availability of equipment to do the job.

The variation in tree condition and degree of recovery has added spice to the industry game of crop guestimating, which is as popular as ever seen in the face of the vicissitudes which the industry is facing and the uncertainties of the summer ahead.

The guesses, as usual, are centred on round oranges, the varieties which determine the supply of orange juice. The state's record crop, which came last season, was 206.7 million boxes and the 1980-81 crop, prior to the freeze, has been officially estimated at 203 million boxes.

Neither of these figures is considered attainable in spite of the fact that the 1980 tree census showed an upswing in citrus acreage. Using the 1978-79 crop, the year following the last freeze, as a basis, the majority are leaning towards a crop ranging in the 150-160 million box range while the more pessimistic are considering the drought and guessing in the 135-145 million range. The lowest extreme mentioned is about 120 million boxes.

LONG TERM CHANGES

The effects of the freeze will be felt far
SEPTEMBER, 1981

beyond this year's or even next year's citrus crop.

One immediate — yet long term result — has been a revival of the Brazilian citrus industry. Brazil as a major factor in the world trade got started as a result of the 1962 freeze which dropped Florida orange production to 54 million boxes in the season following and kept it low for four years.

The Brazilians planted to fill this vacuum and became the number one exporter of concentrate, enjoying their most prosperous years in the wake of the 1977 freeze. The boom years, however were considered over, and Brazil was in the process of moving its huge surplus at a loss when the 1981 freeze provided a respite.

Currently Brazilian concentrate is moving into Florida at prices double those at last December and the industry will receive still another boost when it is able to sell the current crop at a profit.

In Florida, the southward move of the industry will be accelerated. The areas which were seriously damaged during the current freeze were also hardest hit in 1977 and there will be a reluctance to re-plant, especially in view of the real estate boom which has been going on in Central Florida since the start of the Disney World development.

The areas of new plantings are in the flatwoods areas further to the south, areas with high water tables requiring drainage and more suitable to the juice type fruit than to the table market types.

Bearing acreage had shown a continuing decline in the state for the past ten years for a variety of reasons but last season it showed an upturn. The big increases during the past two years have been in the early Hamlin Pineapple, and Valencia oranges, all grown primarily for processing.

FEWER ZIPPER SKINS

The "zipper skins", grown primarily for the fresh fruit market, have been on the decline. The two year change in total tree numbers had shown a net loss of 69,000 Dancys, 13,000 Robinsons, 2,000 Murcotts, 2,000 other hybrids, 61,000 Temples, 47,000 Orlandos, 1,000 Mineolas, and 14,000 Novas.

The single exception to this trend was in navels where tree population increased by 64,000 trees. Florida currently has about 11,500 acres of navels, about ten per cent of which are non-bearing.

Grapefruit also showed a gain during the two year period, all of it in the pink seedless varieties. Numbers of pinks gained by 371,000 while Marsh seedless, once the mainstay of the industry, showed a net decline.

Limes showed a substantial gain but lemons — both Meyers and true lemons — continued to decline. The latest inventory shows 6,538 acres of limes, 4,141 acres of lemons, and 1,355 acres of Meyers.

—California "Citrograph"

AUSTRALIAN CITRUS NEWS

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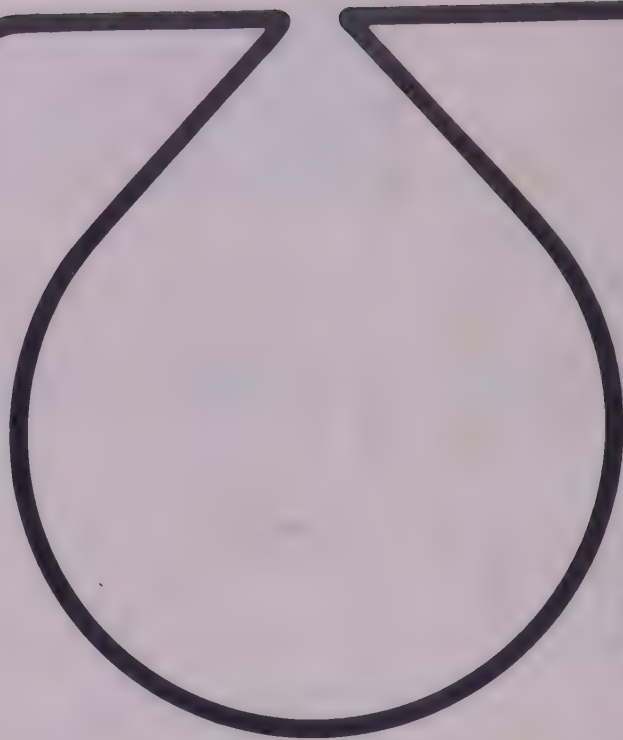
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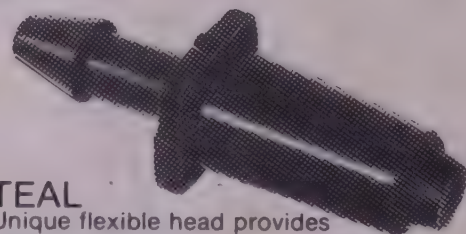


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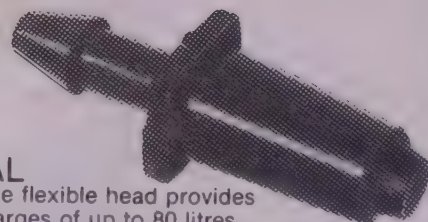
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Fred Walpole's Retirement Dinner

Over 100 citrus growers, industry representatives, Departmental officers and local identities and their wives attended a dinner at the Gosford Leagues Club on September 16, to pay tribute to the service rendered by Mr. Fred Walpole to the citrus industry during his 13 years as manager/secretary of the Central Coast (NSW) Citrus Marketing Board and secretary of the Central Coast Citrus Growers Organisation.

Speakers at the dinner were Mr. Kevin Long, Deputy Chief, Division of Plant Industries, NSW Dept. of Agriculture who paid tribute to Mr. Walpole's work and co-operation on behalf of the Department; Mr. Les Baker on behalf of ACGF; Dr. Brian Wild of the Gosford Horticultural Post Harvest Laboratory; and Mr. Ray Gibson on behalf of the local citrus industry and the Central Coast Agricultural and Research Extension Committee.

During the evening Mr. Baker presented Fred with a book containing many of his famous "doodling" drawings which he has put on paper at ACGF meetings over the years.

Dr. Brian Wild conferred on Fred a "Honorary Doctorate" in the Institute of Tom Foolery and presented him with the appropriate gown and certificate.

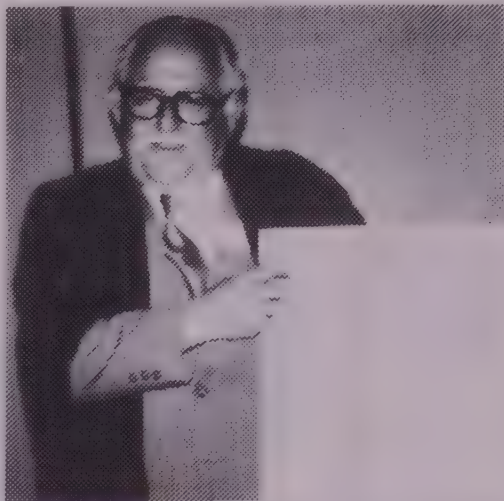
A presentation was also made to M Walpole of a series of photos of view from their home at Gosford to take with them to their new home in South Australia.

In replying to the speakers Mr. Walpole expressed appreciation on behalf of Gwen and himself for the dinner which had been given to them. He traced his association in the citrus industry back to 1933 when as a lad of 18 he started work with the Jusfrute Company.

He said that after serving in the forces during World War II he had taken up citrus growing for a period of six years and after this he had been engaged in selling chemicals to NSW growers for several years. His most rewarding years

had been following his appointment as manager/secretary of the Central Coast (NSW) Citrus Marketing Board in 1967.

Mr. Walpole rated his most satisfying achievements as the development of the processing factory at Wyong; the economic surveys conducted for the



Fred Walpole receives his "Honorary Doctorate" in the Institute of Tom Foolery at his farewell dinner at Gosford.

Central Coast and ACGF; and the high density plantings project.

He expressed his appreciation for the support and co-operation which he had received from the growers during his service with the industry and he also referred to the close relationship which had been developed with the NSW Dept. of Agriculture, the local Research Stations and the Gosford Horticultural Post Harvest Laboratory.

He said that Agriculture and Horticulture had a bright future in the Central Coast region because the organizational structure had been soundly laid, the industry was soundly led and had been soundly developed. He extended his best wishes for the industry's future prosperity.

Mr. and Mrs. Walpole moved to Willunga in South Australia during October and Fred has already commenced his duties as a part-time Economic Research Officer with ACGF.

ACGF was represented at the dinner by Mr. Walker (President), Mr. Cope (General Secretary) and Mr. Baker, a former President.

Report on Seasonal Conditions

—Citrus September, 1981

New South Wales

Revised crop estimates as at first September, now forecast a total main crop of 209,320 tonnes in 1981-82. This compares with the preliminary March estimate of 202,179 tonnes but below the final estimate for the 1980-81 crop of 249,966 tonnes.

Coastal conditions continue very dry while inland districts experienced variable conditions with some useful rain. Spring growth and blossom development is good in all districts. Harvesting of lemons and grapefruit continued slowly while the Valencia harvest commenced in all districts for export, local markets and processing.

MAITLAND

Although very dry conditions continued, tree health is good and a heavy blossom evident. Harvesting of Valencias commenced with fruit of good quality and satisfactory returns being received. The Seminole Tangelo harvest is expected to commence late in the month.

GOSFORD

Dry conditions continued (only 15 mm of rain) with hot and windy periods. Harvesting of late held navels continued while Valencias commenced for both fresh markets and processing. Quality is good with little blemish. Processing of lemons also ceased with local factories.

WINDSOR

Variable conditions were experienced

— dry, hot and windy. The Valencia harvest continued with fruit of good quality and size. Lemons were harvested in small quantities at Maroota, where moisture stressed trees were evident in dry farming situations.

NARROMINE

Useful rain continued during the month, producing strong spring growth and blossom. Harvesting seedless Valencias commenced late in the month. Fruit size and quality is good.

M.I.A.

Mild temperatures and useful rain (39 mm) helped to promote good spring growth and a heavy blossom. The Valencia harvest commenced for a strong processing demand, but poor fruit size will delay extensive harvesting. Grapefruit and lemons were processed during the month and both crops are approximately 50% complete. As in previous years extensive new spring plantings of citrus (mainly Valencias) continued in the M.I.A.

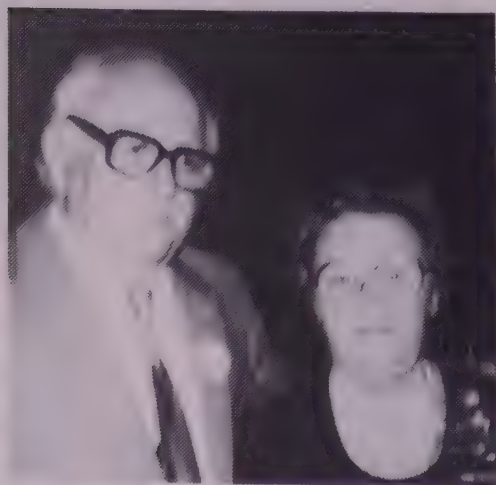
LOWER MURRAY

Variable conditions prevailed but spring growth and blossom development is good. Harvesting Lanes late navels continued with high market returns being achieved. Ellendale exports were restricted due to loss of quality while Valencia harvest continued slowly.

—J. B. Forsyth,

Principal Horticulturist (Citrus).

(Continued on page 10)



Mr. and Mrs. Walpole in a serious mood at their farewell dinner at Gosford.

THE AUSTRALIAN CITRUS NEWS

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Industry Doings

IAC MELBOURNE HEARING CANCELLED

The IAC Hearing set down for November 12, in Melbourne as part of the Inquiry into Orange and Tangerine Juices has been cancelled. Witnesses will now present their evidence in Sydney on November 3, or Adelaide on November 9.

The cancellation of the Melbourne Hearing will enable the Commissioners to visit the Riverland, Sunraysia and MIA citrus growing areas after the Adelaide Hearing and in each of these Districts they will visit a citrus orchard and a processing factory.

ACGF and the Australian Citrus Industry Council will present evidence at the Adelaide Hearing. The ACGF evidence will be presented by Mr. Walker (President), Mr. Cope (General Secretary) and Mr. Walpole.

The ACIC evidence will be presented by Mr. Korallis (President), Mr. N. Cunningham (Vice-president) and Mr. Cope (Secretary).

* * * * *

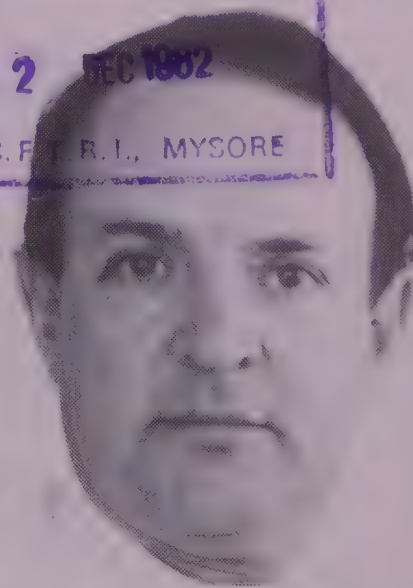
NEW GENERAL MANAGER FOR CITRUS MANAGEMENT CO. LTD.

Mr. Gordon Burtenshaw has been appointed General Manager of the Citrus Management Company Ltd., at Mildura. He succeeds Mr. Rob Miller who resigned from the position earlier this year.

Mr. Burtenshaw, 45, will head the company which co-ordinates the marketing of more than six million cases of fruit a year for The Murray Valley (NSW) Citrus Marketing Board and the Citrus Fruit Marketing Board (Victoria).

He will also be Chief Executive Officer of those Boards, which work in conjunction with the Citrus Organization Committee of South Australia in the Promotion of citrus fruits.

Mr. Burtenshaw was acting accountant for Crossways Travel in



Mr. Gordon Burtenshaw

Sydney until recently, after being administrator of marketing services for Ansett General Aviation, a firm with which he was associated for 10 years.

Mr. Burtenshaw took up his duties in Mildura in October.

* * * * *

NEW CENTRAL COAST GROWERS SECRETARY

Mr. Bob Kuschert, of Taralba, on the Central Coast of NSW, has been appointed Secretary of the Central Coast Citrus Growers Organisation. He fills the position which has been made vacant by the recent retirement of Mr. Fred Walpole.

Mail for the Organisation will still go to the office of the Central Coast (NSW) Citrus Marketing Board (P.O. Box 362, Gosford) but telephone calls should be directed to 043-761229.

Other changes in industry responsibilities in the Central Coast are as follows:

Mr. Jim Smith has retired as Chairman
(Continued on page 14)

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TRISTEZA STEM PITTING

— The Problem Facing the South African Citrus Industry

By L. J. Marais, Dept. of Microbiology and Plant Pathology, University of Pretoria, South Africa

INTRODUCTION

Over the past four years various reports have been made of severe stem pitting and subsequent die-back of young grapefruit trees in South African citrus orchards. These reports are becoming more frequent and involve young plantings, two to four year old trees. The trees develop an acute form of stem pitting in the main stem and branches accompanied by the development of small leaves with subsequent stunting and foliage becoming sparse. This situation is naturally a cause for great alarm especially when thousands of trees are involved and there seems absolutely nothing that can be done to control the disease. The poor nurseryman is more often than not blamed for supplying inferior trees and the nurseryman in turn blames the CIP for registering that specific source of budwood.

Those involved in the implementation of the CIP are carrying out a magnificent task and have only the citrus industry at heart. The trees selected and registered under the scheme are all apparently good trees possessing all the requirements, regarding degree of stem pitting, vigour and performance under field conditions etc. Unfortunately those involved cannot control the forces of nature and are therefore unable to guarantee a similar performance in the daughter trees.

In the absence of tristeza virus the CIP could almost guarantee that the budwood supplied would perform just as well as the parent trees, provided rootstock, soil and climatic conditions are taken into account. Because tristeza virus and its insect vector are endemic in all our citrus growing areas and all citrus is infected, this property is also inherited by the daughter trees together with other known genetic characteristics, the former being beyond the control of the CIP.

The main purpose of this paper is to enlighten the nurseryman and grower of the intricacies and problems facing all who are involved in the citrus industry. The recommendations made may appear to be impractical from a horticulturist's point of view, but, from a pathologist's point of view, they are very sound.

OCCURRENCE OF VIRUS STRAINS IN NATURE

During the process of virus multiplication new strains of virus can occur through different processes which take place. There are three processes which are responsible for the development of strains in nature.

- (a) a **MUTATION** — in which the genetic material is altered by some chemical or physical event.
- (b) **RECOMBINATION** — where an exchange of parts of different

genetic units called genomes, takes place.

- (c) **COMPLEMENTATION** — the process in which two different viruses or strains in an infected cell assist one another in the multiplication process.

The resulting progeny can possess parental characteristics or properties differing from the parental strain. The progeny can, for example, be:

- (i) as virulent as the parent,
- (ii) be less virulent, when it is termed a 'mild' strain.
- (iii) be more virulent and is then described as a 'severe' strain.

This is a continual process in nature and beyond our control (1).

Recombination in viruses usually occurs in those viruses with either single or double stranded RNA that have their genomes divided among two or more pieces of nucleic acid that are analogous to chromosomes. The latter are referred to as multipartite genomes, which in mixed infections reassort and segregate like chromosomes, to produce new types of progeny (2).

Although there is an increasing number of plant viruses being found with multipartite genomes there is so far no evidence that tristeza virus falls into this category.

The most important process as far as we are concerned is mutation. The strains which occur in this way occur spontaneously and arise from the genome of a single parent. Fortunately for us, the majority of the mutations which take place are ineffectual and the strains which arise are either completely defective or non-viable (2). The opportunity for spontaneous mutation to occur is much greater in viruses which multiply to a high concentration e.g. Tobacco Mosaic Virus (TMV) where concentrations of 6 mg of virus per leaf can occur as opposed to tristeza virus where approximately 0.0001 mg of virus per leaf is produced. This latter figure may even be conservative. When considering the mutation rate of viruses 0.1% to 2% (for TMV) it seems highly improbable that any virus culture consists entirely of a single strain. In this context we can regard a citrus tree as a culture, or even an infected leaf for that matter.

Even though the majority of these strains are ineffectual, strains do occur which differ in biological properties and are able to compete selectively with the parental strains. These spontaneous mutants or strains which arise are often recognised because they multiply preferentially in response to some change in environment. The property of a new strain that first allows itself to be

distinguished from other known strains is usually a difference in disease symptoms. Although of prime importance in recognising mutant strains, symptom expression can be quite unreliable as a measure of relatedness between different members of a group of strains. Furthermore, a virus strain causing severe disease is often said to be more virulent than one causing a milder type of disease. This description virulent and avirulent or severe and mild can only be applied to a given strain of the virus which infects a particular variety of host plant grown under defined environmental conditions. A particular variety, especially a long established one, may come to vary considerably in its reaction to a given strain of virus, in this case tristeza, when grown under different environmental conditions (1,2,3).

The environmental factor which has been studied most frequently is temperature. According to temperature requirements citrus viruses can be grouped into 'cool' temperature and 'warm' temperature viruses (4). Tristeza virus is considered a 'cool' temperature virus which flourishes at 20°C to 25°C but is suppressed above 30°C. Temperatures of 28°C to 40°C daytime and 26°C to 27°C night-time were found to eliminate tristeza from the upper portion of infected plants after three to four months. Exocortis, on the other hand, flourishes at 30°C to 35°C and is suppressed at lower temperatures (4).

The question which now arises is this. *Why does a given strain of tristeza virus react differently when exposed to different environmental conditions?* From the definition of mutation, it is seen that strains arise as a result of some chemical or physical event. As far as is known no chemical applied to citrus has a mutagenic effect on viruses therefore certain physical events *must* be responsible for the occurrence.

The physical events which are most pertinent are host plant and climate. When considering the host plant, the only change which may have an effect is the type of rootstock used, and the reaction which is observed depends on the strain itself. It has been found that the degree of stem pitting caused by certain mild strains decreases when rough lemon is used as a rootstock, but not in the case of moderate and severe strains. Trifoliate orange has been shown to reduce the degree of stem pitting in the case of all the strains tested (5, Marais unpublished).

Different lines of one rootstock may also differ in their tolerance to stem pitting, this is unfortunately one aspect which has received very little attention in

(Continued on page 6)

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Tristeza Stem Pitting

(Continued from page 4)

the past but plans have been made by the SACCE to initiate research in this direction. Of the climatic factors involved, temperature appears to be most important. Not just the maximum and minimum temperatures but the number of temperature hours at the maximum temperature. An extensive study of the epidemiology of the tristeza virus complex in South Africa should receive a very high priority (4,6).

SEVERE STEM PITTING — A NEW STRAIN?

In the light of what has been discussed above it may now be possible to describe what is happening in the grapefruit orchards in South Africa. There are several possibilities, all of which may individually or in combination be responsible for the occurrence of an outbreak of severe stem pitting.

ROOTSTOCK EFFECT

Seed used for rootstocks may be selected from different localities and these selections may differ considerably in their reaction to a given strain of virus.

APHID TRANSMISSION

Tristeza virus is known to cause three distinct diseases depending on the host plant, and according to the symptoms produced tristeza virus has been described as consisting of two components viz., *stem pitting* and *seedling yellows*. When transmitted by the aphid *Toxoptera citricidus* trees, such as the sweet orange and mandarin varieties, are infected with the whole complex, but only the stem pitting component is transmitted to grapefruit.

When graft inoculated all the above varieties become infected with the whole complex, but grapefruit appears to lose the seedling yellows component in some way. This may be because this component cannot multiply in the host plant. When seedling yellows and stem pitting components are inoculated together into certain scion/rootstock combinations they cause tristeza disease and the trees collapse completely within a short period. The seedling yellows component appears to have a synergistic effect on the stem pitting component (7).

The enormous fecundity of aphids must also lead to an abundance of mutations; their haphazard manner of dispersal when migrating from one kind of host to another provides a means by which mutations can be selected. Viruses multiply far faster and reach much greater populations than aphids, and one can expect abundant mutations to take place. It is a known fact that viruses and virus strains mutate in the direction of transmissibility by aphids, it is therefore possible that the seedling yellows component of tristeza virus through mutation of the virus or aphid, is being transmitted to grapefruit trees in the trouble areas, and causing the severe stem pitting (8).

NEW VIRULENT STRAINS

Three events may be taking place in this case:

- (i) An entirely new strain has arisen and superimposed itself on the milder strain in the budwood source. The effect of the new virulent strain on the budwood source tree or parent tree will most probably never manifest itself here but will do so in all the daughter trees produced from the parent tree. This strain could have arisen in the parent tree itself or in trees in the surrounding orchards and then been transmitted by the citrus aphid.
- (ii) The dominant strain in the parent tree is a 'mild' strain but is accompanied by another strain or strains, which is suppressed under the prevailing environmental conditions (for e.g. temperature). When this combination of strains is placed in another area where environmental conditions differ, the sub-dominant strain which may be a 'severe' strain reacts to this environment and manifests itself in the form of severe stem pitting. The original mild strain then becomes the sub-dominant strain.
- (iii) The dominant strain in the parent tree is 'mild' under the prevailing environmental conditions, its multiplication is suppressed by e.g. high temperature conditions, but when placed under different environmental condition e.g. cooler conditions, the strain is able to multiply profusely and the reaction then changes from mild to severe stem pitting.

The dominant strain in the parent tree can be assumed to have arisen as a result of a natural selection over the years due to its superior competitive ability under given host and environmental conditions. In (ii) we have a selective multiplication of strains under different environmental conditions.

WHAT ACTION CAN BE TAKEN BY THE NURSERYMAN AND THE GROWER

Possible causes of the severe stem pitting observed in young grapefruit orchards over the past few years, have been discussed above. *Whatever may be the cause it is through no direct fault of the nurseryman nor of the CIP.* Whether new strains have arisen by mutation or recombination, or whether a selective multiplication of strains is taking place under different environmental conditions a solution still has to be found to prevent the spread of this 'new' strain. Whatever course of action is taken it will affect grower and nurseryman alike. A number of courses of action are open. Whether *practical* or *impractical* will be left for the nurseryman and grower to decide.

These possible courses of action are as follows:

- a The nurseryman must only supply trees to the growers in his geographical

area.

- b The grower must supply his own budwood, which the nurseryman, who is situated in another geographical area, uses to prepare the trees for the grower. It is essential that the nursery stock used be virus free *as far as possible*. This means the nurseryman must keep his nursery free of aphids throughout the whole production cycle by judicious and timely insecticidal spray applications.
- c The grower can produce his own trees locally.
- d The nurseryman can make use of virus-free nucellar selection.
- e Make use of the micro-budding technique developed by Holtshauzen (9) to try and escape infection. This technique may be useful in separating the different strains which occur in a budwood source, and in so doing sift out undesirable strains. If the predominant strain is a mild strain it will be the first to infect the young developing buds as its concentration will be higher in infected tissues. Other strains which may be present only infect at a much later stage. It may therefore be possible to escape infection by these strains which may be responsible for the severe pitting.
- f Make use of thermotherapy to eliminate the virus. Treatment of budwood with hot moist air at temperatures ranging from 45°C to 50°C for several hours, has been shown to eliminate tristeza virus from infected budwood (10). Very special equipment is not necessary to carry out the treatment, and the cost involved would certainly be justified.
- g In the long term the citrus industry may have to look to cross protection of selected virus-free nucellar and old line varieties, with suitable mild strains of tristeza virus. Cross protection seems to be a magic word at present. It has been successfully applied in Brazil and there seems no reason why it cannot be successfully applied here provided that certain conditions are met. What cross protection entails and how suitable mild strains are to be selected for cross protection purposes and the progress obtained so far, will be dealt with in a later paper.

CONCLUSION

The severe stem pitting observed in young grapefruit orchards in Nkwalini Valley and Hluhluwe district may be:

- (i) Due to a change in the biological activity of the existing predominant strain in the parent trees, induced by a change in environmental conditions.
- (ii) Due to a new strain arising in the budwood parent tree or other citrus varieties in adjacent orchards especially carriers of the seedling yellows component of tristeza virus. The latter would have then been transmitted to the budwood parent

(Continued on page 7)

Tristeza Stem Pitting

(Continued from page 6)

tree by the aphid vector *Toxoptera citricidus*.

The possibility that the rootstock selection was one intolerant to tristeza virus must not be excluded. It is difficult to single out one or other of the above possibilities but the fact remains that sister trees in another geographical area, and incidentally the same area in which the original budwood parent tree was located, reacted mildly to the same strain of tristeza, is evidence that a new strain is not responsible in this case.

It is essential that the spread of severe stem pitting in these areas be kept under surveillance at all times and, if any new outbreaks should occur, that they be reported immediately.

The very best way in which to control this disease would be to make use of virus-free budwood and nursery stock. This can be done by thermotherapeutic treatment of budwood and the judicious and timely application of insecticides in order to control the aphid vector of the tristeza virus. Where the grower can supply his own budwood to the nurseryman it would be the same as preparing his own trees with a strain of known biological activity.

There is another solution by making use of selected virus-free nucellar sources which have been cross protected with mild strains of tristeza. This however is a long term project. The grower cannot wait for this to materialise. He needs trees in the meantime. To alleviate the situation the first two courses of action appear most feasible.

Far too little is known about the epidemiology of the diseases caused by tristeza virus in South Africa and this aspect should receive the earnest attention of virologists and as soon as possible.

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—Citrus and Subtropical Fruit Journal (South Africa)

Recipe of the Month

ORANGE-GLAZED PORK CHOPS

2 *tbsp.* shortening
6 pork chops, $\frac{3}{4}$ " thick
5 *tbsp.* sugar
2 *tsp.* cornflour
 $\frac{1}{4}$ *tsp.* salt
 $\frac{1}{4}$ *tsp.* cinnamon
10 cloves
2 *tsp.* grated orange rind
 $\frac{1}{4}$ *cup* orange juice
6 orange slices, peel removed
6 *tbsp.* whole-berry cranberry sauce

Melt shortening in large skillet. Brown pork chops on both sides. Cover. Simmer about 45 minutes, or until tender. Add a little water, if necessary, to prevent burning.

Meanwhile, prepare glaze. Combine sugar, cornflour, salt, cinnamon, cloves and orange rind in a small saucepan. Blend in orange juice. Cook over low heat, stirring constantly, until thickened and smooth. Add orange slices. Simmer two minutes.

Drain chops. Arrange on serving dish. Top each chop with an orange slice. Spoon glaze over orange slices. Top each with a spoonful of cranberry sauce.

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— INSPECTION WELCOME —

Citrus Industry Council Supports Increased Tariff Protection

The Australian Citrus Industry Council has decided that the present method of protecting the citrus industry against imports of orange and mandarin juices, i.e., by a variable tariff arrangement, is the only effective way of providing necessary protection to the industry.

The members of the Council have also agreed that the Council should present evidence to the current Industries Assistance Commission Inquiry, which is reviewing the variable tariff arrangement and inquiring into any necessary variations. The Council's submissions will seek a continuation of the system with an appropriate increased level of price support.

These decisions were taken at the Annual Meeting of the Council held in Sydney on 17th September.

The Council is the official organisation representing all sections of the Australian citrus industry and comprises equal representation from the Australian Citrus Growers Federation, the Australian Citrus Processors Association and the Australian Fruit Juice Association.

The President of the Council, Mr. A. C. Korallis, of Berri, South Australia, said after the meeting that these important decisions meant that the industry would be speaking with one united voice in its approach to the IAC Inquiry and in any subsequent negotiations with the Commonwealth Government.

Mr. Korallis said that the present protection arrangements for orange and mandarin juices provided a "floor" price of \$2.40 per kg of Total Soluble Solids, which was equal to about 25.5 cents per single strength litre of juice. When the value of the product for customs duty purposes was below this figure a duty was applied to bring it up to the "floor" price. He said that if the cost of ocean freight, wharfage costs etc., was added to the value plus duty, it resulted in an

approximate cost of imported juice ex store, capital city, of around 29.5 cents per litre.

Mr. Korallis said that about 35 per cent of Australia's orange juice requirements are imported, and Brazil, a low cost producing country, and also the world's second largest producer of citrus fruits, was the major source of this juice.

He said the Australian industry was extremely efficient by world standards but due to the effect of inflation on the costs of growing, processing, packaging and marketing orange juice products in Australia, an increased level of "floor" price was now essential under the variable tariff arrangement if this important horticultural industry is to remain a viable and stable industry.

He said a special case could be made out for continued protection for the industry.

COUNCIL PRESIDENT RE-ELECTED

Mr. Korallis has been re-elected as President of the Council for 1981-82. He has also been re-elected as Chairman of the Australian Citrus Processors Association and he is the Chief General Manager of Berri Fruit Juices Co-operative Ltd., at Berri.

Mr. Neville Cunningham, the President of the Australian Fruit Juice Association has been elected Vice President of the Council. Mr. Cunningham is the Manager of Diverse Products Pty. Ltd. of Adelaide S.A., a subsidiary of Coca Cola Bottlers Ltd.

The President of the Australian Citrus Growers Federation, Mr. Harry Walker, of Mildura, has been re-elected as the third member of the Council's Executive Committee and Mr. Hugh Cope has also been re-elected as Secretary.

PLANS FOR CITRUS CONVENTION

The Council's Annual Meeting agreed to hold a National Citrus Convention during 1982 to bring all sections of the industry together to discuss the future development of the industry. A small sub-committee has been formed to decide on venue, rates and format.

OTHER COUNCIL MATTERS

Other matters considered at the Annual Meeting included market research and promotion, lemon juice problems, recommended parameters for orange juice, the waxing of citrus fruits, industry statistics and other matters relating to the industry.

Our Citrus Industry Leaders



From left, Mr. Harry Walker, President of ACGF; Mr. Bill Korallis, Chairman of Australian Citrus Processors Association and President, Australian Citrus Industry Council, and Mr. Neville Cunningham, President, Australian Fruit Juice Association.



It's our Murray, hurry...
**MAKE THE
RIVER RIGHT**

Brazilian Orange Juice Prices 1980-81

by DANIEL S. TILLEY & DANNY L. GUNTER

Brazil has become an increasingly important factor in the world frozen concentrated orange juice (FCOJ) market.

Imports from Brazil by Florida processors have become a topic of great concern within the Florida citrus industry.

This report provides basic data and conversion factors to facilitate the understanding and interpretation of price quotes for Brazilian product. Second, the cost of packing retail sizes in Florida for a range of possible Brazilian price quotes is estimated.

BASIC DATA AND CONVERSION FACTORS

Brazil FCOJ prices are quoted in U.S. dollars (Table 1).

The unit of measure is usually one metric ton and sometimes is one U.S. gallon of 65° Brix concentrate. In addition, the quote can be for product on board a ship in Santos, Brazil (FOB Santos)¹ or for product unloaded alongside the ship at a Florida port including transportation and insurance (C.I.F. Tampa)². Prices per ton are per ton of concentrate excluding drum and package weight.

¹FOB Santos, Brazil = Free on Board — includes the cost of product on board the ship but does not include transportation from Brazil.

²C.I.F. Florida Port = Cost, Insurance and Freight — includes the product cost, insurance and transportation and unloading at the Florida Port.

It is important to note that price quotes for Brazilian FCOJ can sometimes be deceiving if the quality specifications for the product aren't known. Throughout this report we assume that the product for which the price is quoted meets or exceeds Florida standards.

The second section of Table 1 provides the conversion factors needed when considering the various units in which Brazilian FCOJ is traded. The last section of Table 1 provides information on the assumed costs for transportation, handling, taxes, tariff and reprocessing. These relationships and costs are used in the calculation of the minimum price for which Brazilian FCOJ can be sold in retail size containers in the U.S. market.

DETERMINATION OF THE COST OF PRODUCING RETAIL PRODUCT FROM IMPORTED JUICE

Table 2 shows the estimated costs to acquire and reprocess Brazilian FCOJ into a retail package in Florida processing plants. The calculations in the upper portion of Table 2 are on a pounds solids basis, while those in the lower portion of the table reflects costs per retail case. The FOB Santos prices

considered range from \$500 to \$1300 per metric ton. These prices are converted to a pounds solids basis by dividing the cost per ton by 1433 pounds solids per ton. Transportation costs (including insurance) are assumed to be nine cents per pound solids which is added to yield a C.I.F. cost at Florida ports. Added to the C.I.F. costs are the tariff (34 cents per pound solids) transportation to a Florida plant (2.5 cents per pound solids) and the Florida citrus advertising equalization tax (1.8 cents per pound solids). These costs are totalled to arrive at an estimated total cost at a Florida plant.

The lower part of Table 2 shows the cost of reprocessing Brazilian FCOJ into a retail pack in a Florida processing plant. One case of 48 six-ounce cans packed at 43.4° Brix contains 9.72225 pounds solids. Thus, the various costs at a Florida plant per pounds solids are multiplied by 9.72225 to calculate juice cost per case for the various FOB prices in Santos. Adding an estimated cost of \$3.50 for casing, warehousing and selling a case of 43 six-ounce cans of FCOJ yields the FOB cost per case at Florida plants. The last row show the cost per dozen six-ounce cans.

The cost per dozen is based on the assumption that duty drawback is unavailable. If duty drawback is available then importers can recoup 99 per cent of the tariff, and the costs per pounds solids, per case and per dozen are

calculated omitting the tariff.

Table 3 is similar to Table 2 except that the costs are shown on a per gallon 65° Brix basis (7.135 pounds solids). The FOB price per gallon is calculated by dividing the cost per metric ton by 200.84 gallons per metric ton. Thus a \$600 per metric ton price is equivalent to \$2.99 per gallon, or from Table 2, 41.9 cents per pounds solids. On a per gallon basis, transportation is 64 cents, the tariff is \$2.43, transportation from port to plant is 18 cents and the citrus equalization tax is 13 cents. The costs per case and per dozen six-ounce cans are omitted from Table 3 since they are identical to those reported in Table 2.

It should be noted that the handling and reprocessing costs can vary considerably from one plant to another. Based on the assumption shown, however, Table 2 indicates that imports that cost \$600 per ton could be sold as retail product for \$3.04 per dozen six-ounce cans and the Florida processor would break even. If the Brazilian price FOB Santos is \$900 per ton, the break-even is increased to \$3.55 per dozen. In general, a \$100 per ton change in FOB Santos prices means that the FOB retail break-even price of the product will change 17 cents per dozen in the same direction. If duty drawback were available, the break even price per dozen would be reduced by 82.6 cents.

Table 1. Brazilian FCOJ price quotes, units of measure and cost factors

I. Units Used for Quoting Brazilian FCOJ Prices

U.S. \$ per metric ton FOB Santos
U.S. \$ per U.S. gallon FOB Santos
U.S. \$ per metric ton C.I.F. Fla. port
U.S. \$ per U.S. gallon C.I.F. Fla. port

II. Relationships between Units of Measure for FCOJ

1 Metric Ton	= 2204.6 pounds
1 Metric Ton 65° Brix	= 1433 pounds solids (p.s.)
1 Metric Ton 65° Brix	= 200.84 U.S. gallons 65° Brix
1 Metric Ton 65° Brix	= 331.6 U.S. gallons 43.4° Brix
1 U.S. Gallon 65° Brix =	
7.135 pounds solids	= 1.6512 gallons 43.4° Brix
FCOJ/Case (6- and 12- oz. cans	= 2.25 U.S. gallons
Pounds solids per gallon	= 4.321 at 43.4° Brix
1 55 gal. drum 65° Brix	= 370 pounds solids and
(contains about 52 gal.)	weights about 625 pounds

III. Additional Costs for Brazilian Product Delivered to Fla. Plants Add to F.O.B. Santos price

1. Transportation to Florida port	9c/PS
2. Handling and transport to plant	2.5c/PS
3. Equalization Tax (Fl. Citrus Advertising Tax)	1.8c/PS
4. Tariff	34c/PS
5. Reprocessing costs to convert to 48 6-oz. cans	\$3.50/case 48 5-oz.

(Other tables page 10)

Table 2. Estimated relationship between Brazilian FCOJ prices and the cost of retail packed products made from Brazilian FCOJ in Florida processing plants, 1980-81 season.

FOB price Santos, Brazil	Brazilian Price for Product Meeting Florida Standards								
	-----\$ per metric ton-----								
	500	600	700	800	900	1000	1100	1200	1300
Transportation cost of Florida port	-----¢ per P.S.-----								
	34.9	41.9	48.8	55.8	62.8	69.8	76.8	83.7	90.7
	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0
Cost at Florida port	43.9	50.9	57.8	64.8	71.8	78.8	85.8	92.7	99.7
Tariff	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0
Transportation from port to Florida plant	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Florida citrus equilization tax	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
Total cost at Florida plant	82.2	89.2	96.1	103.1	110.1	117.1	124.1	131.0	138.0
Juice cost per case 43.4° Brix 9.72225 p.s.	-----\$ per case-----								
	48 6-oz. 43.4° Brix								
	7.99	8.67	9.34	10.02	10.70	11.38	12.07	12.74	13.42
Casing, warehousing, and selling cost per case	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
FOB cost per case at Florida plant	11.49	12.17	12.84	13.52	14.20	14.88	15.57	16.24	16.92
FOB cost per dozen 6-oz.	2.87	3.04	3.21	3.38	3.55	3.72	3.89	4.06	4.23

Table 3. Estimated relationship between Brazilian FCOJ prices and the total cost at Florida processing plants, 1980-81 season.

FOB price, Santos, Brazil	Brazilian Price for Product Meeting Florida Standards								
	-----\$ metric ton-----								
	500	600	700	800	900	1000	1100	1200	1300
FOB price Santos	-----\$ per US Gal. 65° Brix-----								
	2.49	2.99	3.49	3.98	4.48	4.98	5.48	5.97	6.47
	.64	.64	.64	.64	.64	.64	.64	.64	.64
Transportation cost to Fla. port	.64	.64	.64	.64	.64	.64	.64	.64	.64
Cost at Florida port	3.13	3.63	4.13	4.62	5.12	5.62	6.12	6.61	7.11
Tariff	2.43	2.43	2.43	2.43	2.43	2.43	2.43	2.43	2.43
Transportation from port to Florida plant	.18	.18	.18	.18	.18	.18	.18	.18	.18
Florida citrus equilization tax	.13	.13	.13	.13	.13	.13	.13	.13	.13
Total cost at Florida plant	5.87	6.37	6.87	7.36	7.86	8.36	8.86	9.35	9.85

Published by the Florida Department of Citrus, Lakeland, Florida: This public document was promulgated at a cost of \$106.06 or \$.118 per copy to furnish the citrus industry with information relating to the cost of Brazilian FCOJ.

—"THE CITRUS INDUSTRY" April, 1981
(Florida)

AUSTRALIAN CITRUS NEWS

Californian Farm Equipment Show And International Exposition

The Californian Farm Equipment Show and International Exposition will be held in Tulare, California from February 9 to 11, 1982.

On display at this annual event will be a full array of farm equipment and accessories. Among the product groups on exhibit will be: chemical equipment, applicator tools, tractors and accessories, feeders, communication systems, water drilling equipment, livestock handling equipment, dairy systems and supplements, fertilizers and fertilizer equipment, waste handling systems, pumps, crop stabilizers, frost protection equipment, dryers, dairy supplies and equipment, fruit handling, sizing, and harvesting equipment, material handling and food processing equipment, solar collectors and systems, transportation systems, and all types of planting, cultivating, harvesting and storage equipment for an enormous variety of crops.

The California Farm Equipment Show and International Exposition has been selected by the United States Department of Commerce for promotion under its Foreign Buyer Program. Attendees will be given all possible assistance by the U.S. Consulate General, Sydney and a group tour to the show and other places of interest will be organized if there is the demand.

If you require further information on the exposition or if you are interested in joining a tour to the show please contact Deborah Corrigan in the Commercial Section of the U.S. Consulate General, Sydney on (02) 2647044.

CITRUS TREES FOR SALE

Contact: C. White, Cobram

Phone (058) 722110

Several varieties, including Valencias and Washington Navels for Spring planting. These trees are budded to Citrange and Trifoliata stocks. All propagating material is from Government sources.

Report on Seasonal Conditions — Citrus September, 1981

(Continued from page 2)

Victoria

ORANGES

Marketing of the remaining Leng Navel and Lanes Late Navel oranges continued through September. Prices have been firm — with most sales at \$8-\$9 per 18 kg carton in Melbourne. In the North Eastern district growers have been still picking last year's Valencia oranges for juicing. In Sunraysia, the harvesting of the new season's Valencia oranges started by the middle of September. Because of the small supplies of Navel oranges there has been a strong demand for fruit at \$6 per carton. In Sunraysia fruit size of Valencia oranges is generally small and because of low acid level the fruit may not hold long this season.

OTHER CITRUS FRUIT

The market has been weaker for lemons, grapefruit and the remaining Ellendale mandarins — with the average price of \$4 to \$5 per standard carton (approximately 19 kg, 16 kg and 9 kg respectively). In Sunraysia the lemon crop appears to be smaller than anticipated considering that fruit matured about 30 days earlier than average, fruit is not expected to hold for long.

GENERAL COMMENTS

Fine and mild to warm weather conditions and generally high moisture content in soils have provided early spring flush growth in citrus plantations in Cobram, Swan Hill and Sunraysia. Very heavy flowering has started, or is about to start in Sunraysia on all varieties. Blossom bud development is also good in the North Eastern district.

—J. Kenez,
Vic. Dept. of Agriculture.

South Australia

Navel harvesting finished on a high note with quality G.A. (giberellic acid) treated fruit realizing good prices on local markets.

The large shipment of Navels to Saudi Arabia was well received with high praise for colour, flavour and juiciness.

Increased production of Valencias in New Zealand is making sales across the Tasman more difficult but satisfactory sales (likely to reach 200,000 bushels) at reasonable prices were negotiated recently. There is a considerable over-run of small Valencias going into processing.

The size problem or lack of growth has already caused one revision of the crop estimate. New citrus plantings are still being made. In the Waikerie area most of October, 1981

the trees are being planted where peaches grew previously.

A considerable number of trees are coming in from nurseries in the Sunraysia area.

Stem end dehydration, probably caused by the burst of heat early in the month, has resulted in some problems with export fruit. Growers were probably misled into thinking their soils were wetter than they actually were. Leaf drop has been reported from most citrus areas. Generally soil tests show that salinity levels are low, indicating that excess salt had already been leached. Once trees have shed the salt carried in their leaves and water quality improves, their health can be expected to improve.

Local markets are realizing up to \$6 a carton for best count Valencias and grapefruit have been bringing \$5.40 in Sydney and Ellendale mandarins \$8.50 for 30-litre packs.

Berri Fruit Juices Co-operative Ltd. (BFJ) has increased Valencia prices by \$7

to \$112 a tonne. Their estimated total intake is 35,000 tonnes. Sunburst Fruit Processors of Loxton will also pay \$112 a tonne for Valencias for 1981-82, the price being firm from October 1 to January 15.

BFJ has increased its sales from \$7.5m. in 1971 to an estimated \$60m. this year. The average increase of 80 per cent a year is about four times faster than the growth in the total fruit juice market.

The Co-operative has chosen to concentrate on fruit juices rather than fruit juice drinks. In 1981, BFJ sales in this range are 76 per cent ahead of the 1980 figure.

The market for canned fruit juices is tending to decline in volume but BFJ's sales are holding steady and its share of the market is increasing.

The Berri Co-operative Packing Union now has its \$600,000 Israeli-made citrus packing plant in operation. The plant uses a special Vibra Pak attachment to automatically machine-pack citrus.

—The State of Agriculture (SA)

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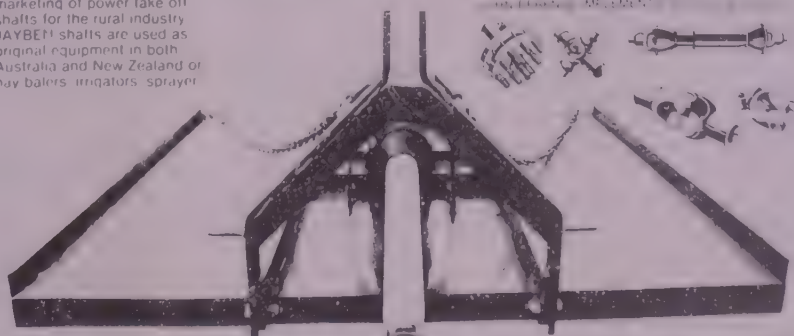
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Brazil: An Update on the Current Season

Brazil is always a formidable factor in international citrus, but the January freezes in Florida will make it all the more important during the upcoming seasons. This article, extracted from the USDA's Foreign Agriculture Circular on citrus fruits, discusses the prospects for the 1981 season and the outlook for the industry. Information was prepared by Edmond Missiaen, Horticultural and Tropical Products Division, FAS.

Brazil's 1981 orange crop (harvest begins in May) is forecast to be slightly less than last year's record harvest. The 1981 crop in Sao Paulo which provides close to 80 per cent of the country's total output and virtually all of the fruit for processing, is forecast at 166 million boxes, down three per cent from 1980.

This relatively modest forecast for Sao Paulo is attributable to the poor care given groves during the 1980 season. Most growers cut back on the use of fertilizer and pesticides, primarily because they were discouraged about marketing prospects for 1981 and because they were short of cash. The growers' cash shortages were due to the late in season payments for their 1980 crop oranges and the tight credit situation. Secondly, there was a slight reduction in citrus area as groves made way for expanding sugarcane production.

Pre-season forecasts of Sao Paulo production are subjective and have a wide margin of error. No reliable survey has been made of the number of orange trees in Sao Paulo. The State Secretariat of Agriculture, using subjective methods, calculated 1980 tree numbers at 106.6 million (101.6 million in the commercial zone). Of the commercial zone trees 80.8 million are classed as bearing and 20.8 as new trees under four years old.

Tree density averages about 210 trees per hectare (85 per acre), so commercial orange plantings cover approximately 481,000 hectares. In Sao Paulo, a tree is considered to be bearing in the fourth year after planting when it should yield about one box of fruit.

In addition to orange trees, there are about seven million tangerine trees, three million lime trees, 200,000 lemon trees, and 100,000-200,000 grapefruit trees in Sao Paulo's commercial citrus zone. There are also about 700,000 or 800,000 orange trees in an area just north of the Sao Paulo commercial citrus zone in the neighbouring state of Minas Gerais.

The average yield for all bearing orange trees in Sao Paulo is about two boxes per tree. Better growers, however, obtain 3-4 boxes, and yields of five boxes are not uncommon.

PROCESSING

During the 1980 season, the Sao Paulo orange juice industry processed 135 million boxes of oranges, ten per cent more than in the previous season. The average processing yield during the 1980 season was about 3.6 kg of 65° brix concentrate per box of oranges (equivalent to 1.19 gallons of 43.4° brix). Average yields are 3.4 or 3.5 kg per box but they vary greatly from year to year having ranged from 3.7 kg to 3.15 kg per box in recent seasons. It is now believed that the amount of fruit available for

processing in 1981 will be only slightly more than that processed in 1980.

Brazilian processors entered the 1980 season with carry-in stocks of 60,000 tons of FCOJ (including 20,000-30,000 tons of "technical" or pipeline stocks). By the end of January 1981, right after the freeze in Florida, processors had accumulated a total of 275,000 tons of stocks. All of these supplies, plus the small amount produced in February, were committed for export shortly after export registrations were re-opened on January 29. Traders foresee an inventory at the end of the shipping season (June 31, 1981) that will include only technical stocks of about 30,000 tons.

The production of FCOJ during the 1981 season will be about the same as 1980 production, but total availability of concentrate will be less because of the expected lower carry-in stocks.

EXPORTS OF FCOJ

For the 1980 season (July 1980-June 1981, the United States is likely to be the destination for 180,000-200,000 tons (equivalent to 60-66 million gallons of 43.4° brix concentrate) out of total exports of 490,000-500,000 tons of FCOJ. Brazilian processors expect the U.S. market to absorb a similar amount of 1981 season exports. About 80 per cent of U.S. imports of Brazilian FCOJ come into Florida, with the rest going to other states. Because export availabilities in the 1981 season are forecast to be about 30,000 tons lower than in the 1980 season, exports to destinations other than the United States, particularly Western Europe, may be down.

Brazilian exports by destination are shown in Table 1. Note that, for the period shown, the U.S. share of total exports ranged from 8-44 per cent. The European market was a little more consistent with 50-60 per cent of exports in the more recent year.

Canada generally takes about ten per cent of exports and, before 1980, all other countries including Israel took another 10 per cent. In 1978 and 1979, the most important destinations in the "others" category were Venezuela, Australia, and Japan. The unfavourable market for FCOJ in 1980 led to a successful effort to expand and diversify markets. In January-September 1980, the 'other' category of countries absorbed 15 per cent of exports, up from seven per cent in 1979. A country breakdown of other destinations in 1980 is not yet available. It is known, however, that Brazilian processors have been attempting to expand markets in the Persian Gulf countries and in the Far East.

The Brazilian domestic market absorbs less than five per cent of the country's output of FCOJ. FAS estimates

domestic utilization during the 1980 season at 18,000 tons, of which about 40 per cent was sold as concentrate or reconstituted juice in retail or institutional size containers. The remainder was utilized as a beverage base by the soft drink industry. At least two new retail products and one new institutional product have been introduced within the past two years.

COSTS AND PRICES

The cost of producing oranges in Sao Paulo differs from grower to grower. It is believed, however, that the average cost of producing a box of oranges in 1980 was equivalent to about \$0.90 or \$1.00. The price received for oranges on the tree last season was 90 cruzeiros per box, equal to about \$1.45. The high rate of inflation — over 100 per cent per year in Brazil — is likely to push 1981 crop production costs up to the neighbourhood of \$1.50 per box. On April 2, growers and processors agreed upon a 1981 season price of 210 cruzeiros per box of oranges, which is expected to be worth about \$2.30 in U.S. currency.

The cost of producing FCOJ from 1980 crop oranges and placing it aboard ship in the port of Santos has been estimated at about \$750 per ton of concentrate. The sales price for 1980 crop concentrate sold after the January 1981 freeze in Florida has been reported to be \$1,150 per ton, f.o.b., Santos.

The costs of producing concentrate for 1981 crop oranges should be substantially greater due to the higher price of fruit and overall inflation. The 1981 season costs, per metric ton of 65° brix FCOJ, may work out more or less as shown in Table 2.

The figures in Table 2 are merely rough estimates and are not meant to be definitive.

The cost of transporting FCOJ to North America or Western Europe during 1980 averaged about \$130 per ton. Costs in April 1981 were about \$160-170 per ton. Savings in operating costs for bulk transport (use of tanker ships instead of drums) are estimated at close to \$100 per ton, but a great deal of capital investment is required before a company can switch to the bulk method.

There are three potential problems which could limit the supply of oranges for Sao Paulo processors in future years. These are citrus canker, a disease called decline, and competition from other crops, especially sugarcane.

Sugarcane is the most important competitor for the land resources now used for oranges in Sao Paulo. Sao Paulo is Brazil's leading state in the production of sugar and alcohol, and its planted area of sugarcane increased by 40 per cent

(Continued on page 13)

Brazil: An Update on the Current Season

(Continued from page 12)

during the past decade. Major cane growing areas lie near the commercial citrus zone and have encroached upon it in recent years.

During 1980, when citrus marketing prospects appeared dim, sugar mills and alcohol distilleries bought or leased an estimated three per cent of the state's orange grove land for planting sugarcane. The competition from cane disappeared when prices for citrus products increased in the wake of Florida's January 1981 freeze. Future hard times for citrus growers, however, would bring renewed pressure from sugarcane, thus putting processors' raw material supplies in jeopardy. There is little risk involved with producing sugar or alcohol because the Government guarantees the price of both products.

Citrus canker, a highly infectious bacterial disease for which no treatment is known, is now considered to be under control, but it remains a threat to the viability of Sao Paulo's citrus industry. The disease was discovered in key lime groves within Sao Paulo's commercial citrus zone in November 1979. By February 1980, over 800 state inspectors were fanning out from the point where the disease was discovered, searching for additional outbreaks. Several additional infections were discovered, all in one valley within three municipalities (countries), and 95 per cent or more of them on key lime trees. All the other trees of infected citrus trees were directly adjacent to key lime trees.

All diseased trees plus healthy trees within 100 metres were eradicated. No new citrus plantings are allowed within five kilometres (3.1 miles) of where diseased trees were discovered. By July 1980, 230,000 trees had been removed and citrus canker was declared to be eradicated from the commercial citrus zone. The citrus canker eradication program continues, however, with reinspection of infected areas every two months, spraying of all trucks and boxes used for citrus, and an extensive educational program.

The campaign to eradicate the disease in parts of Sao Paulo outside the commercial zone and in neighbouring states is continuing with renewed vigor and resources. Part of the campaign's funding will come from a one cruzeiro (about 1.1 cents) per box grower checkoff and a one cruzeiro per box processor contribution for each box of oranges processed in the 1981 season.

After citrus canker, the most serious citrus health problem in Sao Paulo is a disease called decline. It causes isolated trees within a grove to die prematurely and is similar to the blight or young tree decline which afflicts Florida citrus groves. No treatment, other than uprooting the affected trees, has been found.

The mid-term outlook is for continuing increases in the production and processing of oranges in Sao Paulo. By 1984 or 1985 the amount available for processing is likely to be about 170 million boxes, that is, 25-30 per cent above 1980. This is a little lower than forecasts made a couple of years ago, a fact attributable to the paralyzation of new plantings in 1980 and a small loss of area to sugarcane during the past year or two. Aggravation of the problems of citrus canker, decline and competition from sugarcane, or unusually bad weather could prevent this projection from being met.

Greater uncertainty surrounds the longer term outlook. Continuing increases in production beyond 1985 depend upon improvements in yields and additional new plantings during the next two or three years. The yield potential of plantings made in the late 1970's has not yet been reached. After reaching maturity, these trees should bear substantially more fruit than the trees planted in the 1960's and early 1970's. Further contributing to increased yields will be improved grove management practices, many coming on the heels of the citrus canker scare of late 1979 and early 1980.

Because of a lack of planting material, new plantings will be modest during

1981, but should pick up in 1982. The 1981 freeze in Florida and the resulting change in the market for orange juice have put a stop, at least temporarily, to the competition with sugarcane areas, however, place a limit on the area into which citrus can expand.

Today, the only area where any large scale increase in citrus plantings can take place is in the grazing areas along the northern edge of the zone. The new, large processing plant (96 high-speed extractors) near the northern edge of the zone in Colima, is likely to stimulate plantings in that area. The citrus growing potential of neighbouring areas in the state of Minas Gerais is limited by distance from processing plants and by state taxes which the Minas Gerais Government is not likely to excuse for fruit processed in Sao Paulo state.

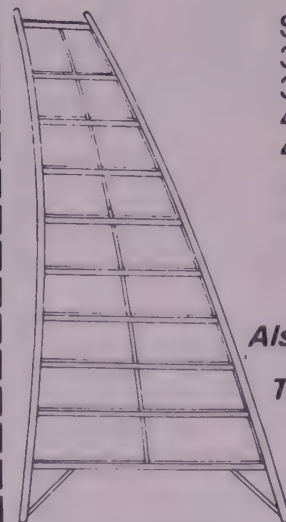
Brazilian processors have their eyes on the markets they will need for the additional amounts of FCOJ they will be producing in the coming years. The United States is viewed as the prime market in future years. They believe Brazil will become the residual supplier of orange juice for the U.S. market. There is also an energetic search for new markets. Of particular interest are the growing economies of the Middle Eastern

(Continued on page 14)

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Pamphlets and further information
available. Trade enquiries welcome.

TABLE 1. Brazil: Exports of frozen concentrate orange juice (FCOJ) 1973-80
(Metric Tons)

Year	United States	Canada	Western Europe	Israel	Others	Total
1973	10,983	8,793	97,291	2,671	1,252	120,990
1974	23,112	7,446	74,992	1,100	1,810	108,460
1975	20,609	21,119	120,052	8,914	10,203	180,897
1976	16,675	15,836	153,730	14,505	9,095	209,841
1977	46,807	20,688	130,764	5,642	9,623	213,524
1978	147,511	33,866	127,367	9,312	17,573	335,629
1979	73,055	28,838	159,863	10,334	20,101	292,191
1980	N.A.	N.A.	N.A.	N.A.	N.A.	401,144
Jan.-Sept. 1980	52,822	24,306	165,659	6,254	43,088	292,129

N.A.—indicates not available. Source: Bank of Brazil/CACEX.

WORKING GROUP TO PREPARE POLICY DISCUSSION PAPER ON AGRICULTURE

The Minister for Primary Industry, Mr. Peter Nixon, has announced details of the Working Group that is to prepare a Policy Discussion Paper on Agriculture.

Mr. Nixon said the Working Group which has been asked to complete its task by 30th September, 1982, would be chaired by Mr. James Balderstone, formerly Managing Director of Stanbroke Pastoral Company.

Other members of the Group will be Sir Donald Eckersley, former President of the National Farmers Federation, Mr. James McColl, Director-General of the South Australian Department of Agriculture, Professor Frank Jarrett, George Gollin Professor of Economics at the University of Adelaide, and Mr. Lindsay Duthie, Secretary of the Commonwealth Department of Primary Industry.

Mr. Nixon said the Government was pleased that individuals with such broad ranging experience had made themselves available for the preparation of the Policy Discussion Paper.

"I am sure they will produce a valuable document that will be of major significance to future policy planning for Australia's rural industries".

Mr. Nixon said the Terms of Reference for the Working Group had been drafted to encompass all issues of relevance to the role of agriculture in the Australian economy.

He said that while the Group would determine its own procedures, the Government envisaged that it would invite submissions from interested parties.

The Government's decision to commission a Policy Discussion Paper was announced earlier this year. The Working Group will be supported by a small Secretariat within the Department of Primary Industry.

- Terms of Reference are as follows:

TERMS OF REFERENCE

Having in mind the changing economic environment of the 1980's, the Committee is requested to identify, for Government consideration, the major policy issues and options relating to the Australian agricultural sector. The Committee's deliberations should include:

- (a) Implications for Australian agriculture of developments in the domestic economy, including resources development and the effects thereof on the competitiveness of the agricultural sector and on intersector relationships.
- (b) Any differential effect which factors, such as fuel and energy pricing, wages and assistance afforded other sectors of the economy may have on farm costs.
- (c) External influences, including developments in overseas countries which are either large markets for Australian rural produce or significant competitors in the world market, including

barriers to agricultural trade and subsidised exports.

- (d) Technical and economic efficiency in resource use in agricultural sector, including

- past and desirable future changes in patterns of sector activities.
- effects on productivity of such factors as
 - substitution of capital for labour
 - size of farm unit.
- farmer education including extension.
- research.

- (e) government measures affecting agriculture including the form and extent of industry assistance and assistance to factors of production; income stabilisation; rural adjustment; research and extension activity; taxation issues and financial arrangements including rural credit.

- (f) Marketing and distribution arrangements for Australian primary produce.

- (g) Agricultural resource management issues including quarantine, conservation and animal husbandry measures.

Industry Doings

(Continued from page 3)

of the Central Coast Agricultural Research and Extension Committee (CCAREC) after giving excellent service to the industry in that position for over 8 years. The new Chairman of CCAREC is Mr. Alan Unitt, who is also the Chairman of the Central Coast Citrus Growers Organisation.

Mr. Jim Smith will be the Central Coast representative on the ACGF Working Committee as from January next year.

* * *

ACGF SUPPORTS VISIT BY RESEARCH OFFICER TO JAPAN

ACGF has agreed to provide \$500 towards the cost of a visit to Japan in November by Dr. C. J. Rigney, Senior Research Horticulturist at the Gosford Horticultural Postharvest Laboratory.

During his visit Dr. Rigney will

address an International Atomic Energy Agency Seminar on Food Irradiation; attend a meeting on Ethylene di Bromide (EDB) fumigation being held in association with the International Citrus Congress; and visit the Yokahama Plant Protection Station.

The visit could have important implications for the industry because of the efforts being made to gain access for Australian citrus fruits to the Japanese market.

The opportunity for Dr. Rigney to speak at the Food Irradiation Seminar will enable discussions on fruit fly disinfestation studies with other scientists involved in food irradiation. In the light of the possible ban on the use of EDB in the U.S., the most suitable alternative treatment with long-term potential appears to be low-dose gamma irradiation.

Brazil: An Update on The Current Season

(Continued from page 13)

and Far Eastern countries. Lastly, some processors believe the Brazilian market itself will eventually provide a substantial outlet for future sales. With this in mind, all of the large and medium

processors have made products available now sold only on a small scale, for retail or institutional markets in Brazil.

—The Citrograph
(California)
July 1981.

TABLE 2

Dollars per	Metric Ton
Fruit (285 boxes at \$2.30/box)	656
Pick and haul (\$0.50/box)	142
Raw material financing cost	30
Processing cost	250-300
Transport and warehousing (incl. by-products)	45
Brokerage fees	40
Export tax (10 per cent of f.o.b. price)	120
LESS: By-product sales	200
Total cost, f.o.b., Santos	1,083-1,133
Cost per pounds solids 1/	0.76-0.79
1/ — 1,433 pounds solids (p.s.) per metric tone of 65° brix FCOJ.	

AUSTRALIAN CITRUS NEWS

Fresh Citrus Exports

JULY SUMMARY

AUSTRALIAN FRESH FRUIT EXPORTS BY STATES (TONNES)

	Qld.	N.S.W.	Vic.	S.A.	W.A.	Total
Grapefruit	29.1	1.4	—	9.5	0.1	40.1
Lemons	59.3	41.6	109.5	226.3	14.4	445.1
Mandarins	2137.9	12.1	—	48.5	0.5	2199.0
Oranges	76.1	19.5	171.8	5427.0	4.0	5698.4
	2296.4	94.6	281.3	5711.3	19.0	8382.6

AUSTRALIAN FRESH FRUIT EXPORTS BY DESTINATIONS (TONNES)

	Grapefruit	Lemons	Mandarins	Oranges	Total
PNG & Sol. Islands	1.5	1.5	25.4	53.9	82.3
Pacific Islands	0.7	0.1	2.0	30.5	33.3
New Zealand	—	—	—	1572.9	1572.9
Singapore	—	19.1	199.6	505.4	724.1
Malaysia	—	0.9	16.0	526.8	543.7
Brunei	—	—	0.5	—	0.5
Philippines	0.2	1.5	—	1.5	3.2
Indonesia	0.1	1.8	127.7	272.8	402.4
Hong Kong	—	172.3	160.1	278.2	610.6
Bahrain	—	—	20.4	—	20.4
U.A.E.	0.2	0.1	1.3	—	1.6
Saudi Arabia	—	188.4	364.8	2232.1	2785.3
Kuwait	—	—	63.8	—	63.8
Mauritius	—	8.9	60.4	91.6	160.9
Canada	—	36.8	903.7	—	940.5
Holland	28.1	—	—	97.9	126.0
Sweden	—	—	113.0	—	113.0
Belgium	—	12.9	—	14.1	27.0
Norway	—	—	109.6	—	109.6
Germany	—	—	30.7	—	30.7
U.K.	9.3	0.8	—	20.7	30.8
	40.1	445.1	2199.0	5698.4	8382.6

Source: Department of Primary Industry.

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Irrigation Storages Report

SEPTEMBER SUMMARY

STORAGES	Capacity Megalitres	Week Ending 30-9-81 Megalitres
Dartmouth Reservoir	4,000,000	2,624,000
Hume Reservoir	3,038,000	2,878,000
Lake Victoria	680,000	639,000
Menindee Lakes	1,794,000	1,360,000
Burrinjuck	1,026,000	1,026,000
Blowering	1,628,000	1,562,918

WATER FLOWING TO SOUTH AUSTRALIA (River Murray)

	Megalitres
Week ending 30-9-81	678,000
Monthly entitlement for September	135,000
Total for September to 30-9-81	2,479,000
Total for August	1,354,000

WATER QUALITY (River Murray)

(Average quality for week — total dissolved solids in parts per million)

	30-9-81	25-9-80
Swan Hill	205	170
Euston	109	235
Red Cliffs	137	203
Merbein	142	244
Lock 9	144	204
Lake Victoria	258	288
Berri	228	228
Waikerie	258	336
Mannum	228	390
Murray Bridge	228	420

—Extracts from River Murray Commission Reports and NSW Monthly Weather Review.

October, 1981

AUSTRALIAN CITRUS NEWS

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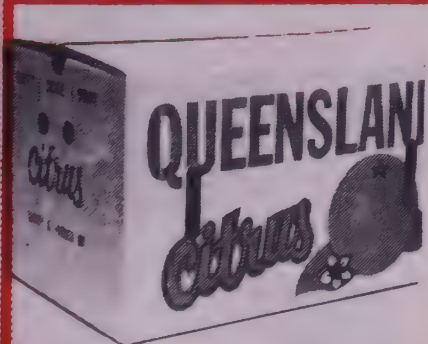
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EDITOR'S NOTE

Indications are that the 1981-82 season crop of Valencia oranges will not yield the tonnage originally forecast.

The April 1981 forecast was for a crop of 254,000 tonnes, which was down 2.3 per cent (6,000 tonnes) from the record crop achieved in 1980-81 of 260,000 tonnes.

At the time of the April forecast it was expected that although the fruit was small, that it would probably develop in size as the season progressed. This does not appear to be happening and the end result could well be a crop even below the level of 1979-80 when 248,000 tonnes were harvested.

Revised crop figures have been requested from the industry and should be available by early December.

The reduced crop is creating a strong demand situation among processors.

Churchill Fellowships Available for 1983

The Winston Churchill Memorial Trust is now calling for applications from Australians, of 18 years and over, from all walks of life who wish to be considered for Churchill Fellowships tenable in 1983.

Completed application forms and reports from three referees must reach the Churchill Trust by February 28, 1982.

People wishing to be considered for a Churchill Fellowship should send their name and address with a request for a copy of the Churchill Trust's Information Brochure and application forms to:

The Winston Churchill Memorial Trust,
P.O. Box 478,
Canberra City, ACT 2601

or, for residents in South Australia and Western Australia the appropriate address below:

G.P.O. Box 498,
Adelaide, S.A. 5001
P.O. Box 6209, Hay Street East,
Perth, W.A. 6000

OBJECTS OF THE CHURCHILL TRUST

The Winston Churchill Memorial Trust was established in Australia in 1965, the year in which Sir Winston Churchill died. The principal object of the Trust is to perpetuate and honour the memory of Sir Winston Churchill by the

award of Memorial Fellowships known as "Churchill Fellowships".

FUNCTION OF THE CHURCHILL TRUST

The aim of the Churchill Trust is to give opportunity, by the provision of financial support to enable Australians from all walks of life to undertake overseas study, or an investigative project, of a kind that is not fully available in Australia. This opportunity is provided in furtherance of Sir Winston Churchill's maxim that: "with opportunity comes responsibility".

There are no prescribed qualifications, academic or otherwise, for the award of a Churchill Fellowship. Merit is the primary test, whether based on past achievements or demonstrated ability for future achievement in all walks of life. The value of an applicant's work to the community and the extent to which it will be enhanced by the applicant's overseas study project are important criteria taken into account in selecting Churchill Fellows.

Fellowships will not be awarded in cases where the primary purpose of the application is to enable the applicant to obtain higher academic or formal qualifications nor to those in a vocation

which offers special opportunity for overseas study.

The Churchill Trust gains its income from its capital fund which now stands at over \$7.6m. The original capital of \$4.2m was subscribed, or pledged, in 1965 by all sections of the Australian community to enable the Churchill Trust to be established as a perpetual memorial to Sir Winston Churchill.

SCOPE OF CHURCHILL FELLOWSHIPS

Churchill Fellows are provided with a return economy-class overseas air-ticket and an Overseas Living Allowance to enable them to undertake their approved overseas study project. In special cases they may also be awarded supplementary allowances including Dependant's Allowance. Fifty-nine Churchill Fellowships were awarded for 1982 at a total budgeted cost of \$450,000.

All Churchill Fellows are presented, at an appropriate ceremony, with a certificate and badge identifying them as such. The certificate bestows upon the recipient the prestige of being a Churchill Fellow and, while a Fellow is overseas, serves to open many doors that would not otherwise be opened to a private individual.



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Industry Doings

COC ANNUAL MEETING

The annual meeting of the Citrus Organisation Committee of South Australia (COC) will be held at Barmera S.A. on Friday 27th November.

A special guest at the meeting will be Mr. Ted Chapman, the South Australian Minister of Agriculture. Representatives from ACGF, the Citrus Marketing Boards at Mildura, and packers, processors, growers and merchants will also attend.

* * * * *

ACGF MEETINGS IN SYDNEY

A series of ACGF meetings will be held in Sydney on Wednesday and Thursday 2nd and 3rd December, 1981.

The Lemon Sub-committee will meet on 2nd December at 10.00 a.m. Items listed on the agenda include a review of the 1981-82 lemon season; fresh lemon exports; industry co-operation in dealing with lemon problems; FISCC minimum prices and terms of payment; lemon juice research; and the effect of IAC tariff simplification recommendations on imports of lemon juice.

The ACGF Working Committee will meet in the afternoon of 2nd December and will review progress in the IAC Inquiry into orange and tangerine juices; will consider the results of the ACGF Economic Survey for 1980-81 and will deal with matters arising from the Lemon Sub-committee meeting.

On Thursday 3rd December there will be a half yearly meeting of delegates commencing at 10.00 a.m. This meeting will review industry activities since the time of the 1981 Annual Conference held in May this year and the agenda items include a review of the 1981-82 season;

the IAC Inquiry into orange and tangerine juices; the IAC inquiry into customs tariff simplification; lemon industry matters; export matters, including the negotiations to gain access for Australian citrus fruit into the Japanese market, and the Government's decision to recover 50 per cent of export inspection costs on fresh citrus exports as from 1-1-83; research projects on grapefruit juice and lemon juice; promotion activities; arrangements for the 1982 Annual Conference; and reports on Australian Horticultural Growers Council and National Farmers Federation matter.

* * * * *

1982 AUF CONVENTION

The Australian United Fresh Fruit and Vegetable Association (AUF) will hold its 4th Annual Convention at Hilton International Hotel, Sydney from 4th to 7th May, 1982 inclusive.

The Convention brings together growers, wholesalers, retailers, transport operators, packaging companies and other groups concerned with the production and marketing of fresh fruits and vegetables and is an important function in the horticultural industry calendar.

* * * * *

DPI CHANGES TITLE OF EXPORT OFFICER

The Department of Primary Industry has advised that the position of Chief Fruit Officer (Exports) has now been changed to Director of Export Standards (Horticulture).

The position is currently held by Mr. Cec Flynn operating from the Melbourne office of the Department.

ADVERTISEMENTS TECHNICAL DATA

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ACGF Gives Evidence on Tariff Protection

The Australian Citrus Growers Federation presented evidence to the IAC Inquiry on Orange and Tangerine (Mandarin) Juices in Adelaide on Monday, November 9. Appearing on behalf of the Federation were Mr. Harry Walker (President), Mr. Hugh Cope (General Secretary) and Mr. Fred Walpole, ACGF's Economic Research Officer.

The Commissioners who are conducting the Inquiry are Mr. G. F. Johnson (Presiding Commissioner) and Mr. C. G. Dyson (Associate Commissioner).

The Inquiry arose from the Government's decision to review the existing assistance arrangements applying to orange and tangerine juices.

The reference to the IAC requires the Commission to review the operation of the variable tariff arrangement for these juices and also to inquire and report on whether the existing arrangements should be varied. The Commission is required to report to the Government by June 30, 1982.

In addition, the Minister for Business and Consumer Affairs requested that if during the course of its inquiry the Commission finds evidence of significant duty evasion under the present assistance arrangements and considers that short term action should be taken to correct the situation pending the provision of its report, it provide the Government with an interim report on the matter.

The issue of duty evasion was the subject of a hearing held in Sydney on 14th July.

The main thrust of the ACGF evidence to the November 9 hearing was aimed at maintaining the existing form of tariff assistance — the variable tariff — on orange and tangerine juices.

The Federation also requested that the level of the "threshold price" under the variable tariff (currently \$2.40 per kg Total Soluble Solids) be adjusted upwards to take account of changes in grower/processor economics since 1979, with a view to restoring the local industry's relative competitive position and rate of return; that the level of the "threshold price" be then adjusted at two-yearly intervals thereafter to allow for the effects of inflation and to ensure that the relative competitive position was being maintained; and that the basis of the variable tariff be altered from the present concept based on the "value for duty" of the imported goods to the "FOB price" so as to minimise any possibility of duty evasion.

In support of these requests the ACGF evidence emphasised the following factors:

1. The Variable Tariff has created stability and confidence in the Australian citrus industry.

2. The industry has adopted a responsible attitude in its development and growth under the assistance provided by the variable tariff.

3. The industry has taken steps to

improve its efficiency at the growing and processing levels.

4. Adjustments are taking place in the grower sector of the industry.

5. Processors and convertors have introduced new packages and have carried out extensive promotional activities to promote the consumption of orange juice and orange juice products.

6. The costs of growing and processing oranges are increasing at levels at least equal to the rate of inflation.

7. Under the present variable tariff arrangement the industry is unable to pass on increased costs to the consumer and still remain competitive with the imported product. Accordingly, the real level of assistance has declined.

8. The industry is a long term industry and needs long term security to enable it to successfully plan and develop along sound efficient lines.

9. The industry is of vital economic importance to the many towns and regions in which the industry operates.

10. There are special circumstances concerning the citrus industry which justify the need for a level of assistance which may be greater than that normally provided to industry.

11. The variable tariff mechanism is the only effective way of providing appropriate assistance to orange growing and processing.

The evidence also dealt with the industry structure and background, the relationship between the processing and fresh fruit markets; the growers economic situation based on the results of the 1980/81 ACGF Economic Surveys; the importance of the sales tax exemption for fruit juice products containing not less than 25 per cent Australian fruit juice; the important stabilising influence of the FISCC in determining minimum factory prices; the relative competitive position with overseas producing countries; and the effect that alternative forms of assistance such as specific tariffs, ad valorem tariffs etc., would have on the industry.

IAC REACTION

The questions asked by the Commissioners indicated that they considered the industry was very highly protected at the present time in comparison with the effective levels of protection provided to other horticultural and rural industries and to industry generally. They also referred to the fact that the variable tariff mechanism insulated the industry against world prices for orange juice concentrate and prevented the industry from

receiving the market signals related to the general world supply/demand situation.

The Commissioners also sought information concerning the relative levels of cost efficiency and technical efficiency between the Australian and US citrus industries and this information will be the subject of a further supplementary submission by the Federation. This submission will also provide details of progress in closer planting techniques and other orchard practices aimed at improving the economic efficiency of growing citrus.

OTHER SUPPORTING EVIDENCE

Evidence was also presented by the Australian Citrus Industry Council requesting a continuation of the variable tariff arrangement and seeking an upward adjustment in the level of the "threshold price", with appropriate regular adjustments to ensure that the real level of protection is maintained.

This evidence was presented by Mr. Bill Korallis, the Council's President; Mr. Neville Cunningham, President of the Australian Fruit Juice Association; and Mr. Hugh Cope, General Secretary of ACGF. Mr. Korallis is also President of the Australian Citrus Processors Association.

Other organisations which presented evidence to the Inquiry in both Sydney (3-11-81) and Adelaide included the NSW Department of Agriculture, the S.A. Department of Agriculture, the Bureau of Agricultural Economics, the NSW Free Growers Citrus Council, Keith Harris and Co. Ltd., the Food Preservers Union of Australia; the South Australian Co-operative Packers; and AU Services, a Sydney company involved in the distribution of orange juice concentrate imported from Brazil.

BAE CONCLUSIONS AND RECOMMENDATIONS

In the evidence presented by the Bureau of Agricultural Economics they submitted the following conclusions and recommendations.

● Since 1977-78, world prices of orange juice have declined in real terms while real prices for processed and fresh oranges in Australia have been broadly maintained. This has resulted in an upward trend in the level of assistance provided to the domestic industry, which is now well in excess of the support given to other horticultural industries.

● For at least up to 1985 there is a strong prospect of continued falling real prices for frozen concentrate orange juice in the world market as Brazil's

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Grapefruit is Beaut Fruit

DEC 1982

"Grapefruit. Yes, it's Beaut Fruit" according to Tony Barber, one of Australia's most popular TV and radio stars.

Grapefruit is part of the health conscious announcer's regular morning "snack" during his Breakfast Show on Melbourne radio station 3UZ.

The star of Channel 9's "Sale of the Century" is one of the many morning radio announcers who has regularly been given a grapefruit breakfast as part of a "Beaut Fruit" promotion conducted in Melbourne recently by the Victorian Citrus Fruit Marketing Board. Bert Newton, another popular TV and radio personality has also been involved in the project.

The board initiated the campaign to make sure more people turn to fresh grapefruit for breakfast, as a dessert at dinner, or in fact at any time of the day.

As well as the extensive radio campaign, colourful posters and recipe pamphlets were on display at nearly 2,000 greengrocers throughout Melbourne urging people to "Buy One — Serve Two".

During the campaign "Beaut Fruit" girls held tastings in the City and Suburbs and even visited Parliament House to give the local Parliamentarians a taste of grapefruit.



Well known TV and radio personality Tony Barber enjoys a serve of grapefruit during his morning radio programme on Radio Station 3UZ.

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ACGF Gives Evidence on Tariff Protection

(Continued from page 4)

production expands. Prices may well decline in nominal terms also. Imports of orange juice into Australia could be even cheaper if Australia's real exchange rate with Brazil were to appreciate. Beyond 1985, the situation appears to depend on growth in demand, the Brazilian Government's success in controlling production, competition for land from sugarcane in Brazil and production plans of other countries.

- The Australian orange juice industry is, therefore, likely to face increasing competition with imports, depending on the level and form of assistance provided. There are some potential cost reductions associated with size economies and higher density plantings at the growing level but both are long-term adjustments. The potential for cost reductions in the processing and converting sectors is not known. However, it is unlikely that cost reductions will be sufficient for the industry as a whole to become competitive with the landed cost of imported FCOJ at present, let alone with falling world prices.

- The existing variable tariff arrangements provide stability but do not pass on the world market prices signals to the orange growers, with the result that resources are being channelled into the orange industry. The industry appears to be responding to the high rate of assistance as passed through in FISCC prices and premiums paid above these prices by substantial plantings of orange trees. A reduction in assistance would reduce the current rapid growth of the industry but it is not clear what level of

prices would result in the replacement of existing trees with other crops.

- The growth in domestic orange consumption will be affected by future price levels but, assuming a continuation of recent trends, demand is likely to remain well in excess of supply and a domestic surplus is not expected to arise.

- However, the existing level and form of assistance has a number of economic disadvantages, viz:

- it insulates the industry from trends in world prices;

- it imposes a significant cost on consumers and constrains consumption of oranges and orange juice;

- it contributes to upward pressure on land prices.

- it attracts resources out of low assistance industries; and

- it is a relatively inefficient method of supporting the incomes of small farmers.

- Under these circumstances, there does not appear to be any economic case for continuation of the existing levels of assistance, although there may well be a case for welfare or adjustment support to low income families. It is recommended that an assistance package be developed in which the level of support is gradually reduced to a level commensurate with that received by other horticultural industries, bearing in mind the mixed horticultural enterprise nature of orange producing farms. This package should also be designed to ensure that a degree of price stability is provided to the domestic industry but that prices should move in accord with longer term trends in world markets.

- A reduction in assistance at the

same time as world markets are showing an adverse trend could place a major burden on the industry. The BAE is mindful of the potential impact on farm incomes and on regional economies where employment and infrastructure have been developed to service the industry. Moreover, the Bureau is aware of the fixed nature of investment in orchards and the long lead times that are involved in tree and vine crops. Further research is needed in a number of areas, including continued assessment of the longer term world market situation, cross elasticities between fresh and processing oranges, impact of the citrus industry or regional economies, disaggregation of tariff and sales tax assistance effects and adjustment options available to the industry.

- Nevertheless, under the current arrangements, the industry is clearly insulated from the trends that would be implied by market signals. Maintenance of the current threshold and FISCC

(Continued on Page 11)

SA Government Supports Citrus Tariff

The South Australian Government has asked the Industries Assistance Commission to continue the variable tariff on imported orange juice.

Announcing this, the Minister of Agriculture, Mr. Ted Chapman, said citrus production was an important part of South Australia's horticultural industry, and a crucial ingredient of the Riverland's economy.

"We have made a submission to the IAC seeking retention of the variable tariff and requesting that the period of assistance be extended beyond the three-year term currently operating", Mr. Chapman said.

"We have also asked that the tariff level, which is tied to the price of imported juice, be reviewed annually".

Mr. Chapman said the citrus industry accepted the need for imports to satisfy the domestic market.

However, imports would begin to compete with local production if the cost of local citrus exceeded the current tariff by a large enough margin.

The Government supported the industry's requirements for the tariff to provide an incentive for long-term planning and planting.

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Recipe of the Month

Citrus Prize to Kingston-on-Murray Housewife

The Chairman of the Citrus Organization Committee of South Australia (COC), Mr. P. T. Sanders, has announced that Mrs. I. P. Egel, of Kingston-on-Murray, is the winner of the "Citrus Creations" competition. The prize is a weeks accommodation for two, staying at the Ozone Hotel, Kingscote, Kangaroo Island, S.A.

The competition was conducted by COC to find the most outstanding recipes using citrus fruits.

The judges were Mrs. Liz Bull, of Renmark, a qualified Home economics teacher and holder of a Diploma of Cordon Bleu Cookery (U.K.), Mrs. Margaret Hurst, of Hope Valley, winner of over a thousand prizes for cooking and now a recognised show judge, and Mr. Mark McKenzie, A.B.C. Rural Journalist, of Renmark. The judges congratulated all entrants on the standard of entry and gave a special mention to Mrs. J. C. Doherty for her 'Riverland Citrus Breakfast' recipes.

MRS. EGEL'S WINNING RECIPE

HAZELNUT CITRUS SUPREME

PASTRY: 90g Hazelnuts — toasted and ground, 90g butter, 2 tblspn castor sugar, 120g plain flour.

Soften and beat butter and sugar. Stir in nuts and flour. Chill for 30 mins. Line 25cm (10") pie plate. Bake blind 10 mins at 375°F. DO NOT let pastry brown, it will taste scorched.

FILLING:

1 tin of Carnation milk — chilled.
1 cup orange juice.
Juice of 2 lemons.
Make up to 2 cups.

Heat and dissolve in 1 pkt. orange jelly and 1 tspn gelatine. When juice is cold, whip in the milk and beat till thick and light. Pour into baked shell.

DECORATION: Shred finely skin of 2 oranges and cook until tender in syrup — ½ cup water, ¾ cup sugar. Drain well and continue to boil syrup gently, till thick. When cold, spoon onto pie and sprinkle on the candied peel. Pipe on whipped cream around the edge and sprinkle with grated chocolate.

Mrs. Doherty's entry which received special praise from the judges:

RIVERLAND CITRUS BREAKFAST

CITRUS STARTER: 2 oranges, peel and pith removed, divide into segments. 1 grapefruit, peel and pith removed, divide into segments. 25g or 1 oz. seedless raisins. 25g or 1 oz. walnuts, 2 tablespoons clear honey.

Put all ingredients in a bowl and mix well. Cover and leave in the refrigerator overnight. The next morning, divide equally between 4 individual serving bowls. Can be served as it is, or with Yoghurt or an Orange Cream.

Accompany this with:

CITRUS SPARKLER: 1 small grapefruit, 1 lemon, 2 small oranges, 600 ml or 1 pint water, 50g or 2 oz. soft brown sugar, 1 small orange, sliced.

Wash the fruit, then chop coarsely, including the peel, pith and seeds. Place in an electric blender with the sugar and water. Blend for about 5 seconds until the fruit is chopped into small pieces. (DO NOT blend any longer or the pith will make the juice better). Strain into a bowl, then chill in the refrigerator until required. Pour into individual glasses and float the sliced orange on the top before serving.

Followed by:

SCRAMBLED EGGS: 2 eggs, pinch salt, 1 tblspn of milk, pinch of pepper, 25g or 1 oz. butter, juice of ½ an orange.

Beat the eggs in a bowl just enough to mix yolks and whites well. Add seasoning and orange juice. With pan over low heat, melt the butter, pour in the milk, add the beaten eggs and rotate the pan gently to blend all the ingredients. Now, stir in the mixture lifting the egg in large creamy flakes as it sets on the bottom of the pan.

N.B. As an added touch, a dash of Tabasco sauce can be added along with the orange juice, as this compliments the bitey taste of the juice.

To complete the breakfast both spiced orange tea and coffee is served:

SPICED ORANGE TEA: Finely grated rind and juice of 2 large oranges. 1¾ pints of water, 2 tblspns of tea leaves, 1 small orange, sliced to serve, 1 cinnamon stick, ½ tspn cloves.

Put the water, orange rind, juice and spices in a pan. Bring to the boil, then pour over the tea leaves in a warmed tea pot. Cover and leave to infuse for 5 to 10 minutes. Strain and serve hot or cold with orange slices floating on top.

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— INSPECTION WELCOME —

Plants Variety Rights and Aust. Horticulture

By Professor Michael G. Mullins, Department of Agronomy and Horticultural Science, University of Sydney

Twelve months ago the proposal to introduce Plant Variety Rights (PVR) legislation in Australia was a non-issue, but it has since grown into a hot potato.

Initially, the idea of PVR, a system of plant patent in which plant breeders obtain exclusive rights for the commercial exploitation of new varieties, did not excite our politicians or anyone else outside agriculture and horticulture, and it seemed that the legislation would be introduced unopposed.

PVR is not new and is already operational in most developed countries including the USA and EEC. Primary industry organizations, led by seedsmen and nurserymen, have been pressing for PVR in Australia for some years. They argue that a system of patent which provides the plant breeder with protection similar to that given to developers of industrial processes or products, will promote investment in plant breeding in Australia and will also guarantee us continued access to new plant varieties bred overseas.

If Australia does not have a PVR system which is in line with the laws of the major plant breeding countries (US and Europe) it is clear that overseas breeders will not release their materials to the Australian market and thereby lose control of their investment. Australia spends relatively little on plant breeding and loss of overseas varieties could severely disadvantage many of our producers, especially horticulturists.

A vociferous opposition to PVR has arisen in recent months. This opposition has come from both expected and unexpected sources. Environmental ayatollahs seem to spring up whenever there is a new development in primary industry and PVR is no exception. Canadian author, P. R. Mooney, is the leading opponent and his Australian acolytes include a so-called "National Seeds Action Coalition".

Another factor which has prompted opposition to PVR is the involvement of multi-national companies in the seeds industries. In Britain, the introduction of PVR led to the takeover of many smaller seedsmen (most of whom were seed merchants rather than plant breeders) by multi-national concerns including chemical companies. This is seen by multi-national-haters in Australia as a sinister development. They assert that PVR will encourage the malevolent multi-nationals to take over the breeding of crops, plants, and the distribution of seeds, and that these companies will then deliberately breed crop varieties with an obligate requirement for agricultural chemicals.

Further, it is feared that the multi-nationals will establish captive markets for proprietary varieties in underdeveloped countries and will commit genetic rape on the germ plasm resources of the Third World.

To this proposed scenario for disaster can be added the unexpected opposition of the Australian Council of Churches. The Council fears that PVR in Australia will lead to exploitation of farmers in the Third World through our use of their wild species in breeding improved crop varieties. Apparently, there are objections on moral grounds to this seemingly inoffensive activity.

The opponents of PVR were successful in getting the proposed legislation shelved until 1981. It was to have been introduced into the Parliament in 1980 but it seems that the Minister for Primary Industry, Mr. P. Nixon, was unwilling to take on such a controversial issue during an election year. However, many people, including those whose livelihoods are dependent upon the growing of plants, are impatient at this delay, and at the misinformation on PVR which is being served up to the public in the guise of sweet season and Christian morality.

PVR is not a simple issue and it involves some quite complex questions in agricultural science. It also involves the well being of our rural industries and it has worthwhile benefits for Australian consumers, especially in the quality and wholesomeness of fresh foods. It is foolish to dismiss PVR out of hand as a plot by trans-national agro-chemical companies without, first, giving due consideration to the facts. Unfortunately, many significant facts on PVR do not seem to have been aired in public.

PVR AND PLANT BREEDING IN AUSTRALIA

In a country with a predominantly suburban population it is, perhaps, inevitable that agriculture, and all that it involves, should be poorly understood. It is likely that most critics of PVR have little idea of what is involved in a plant breeding programme for one of the major crops. Modern plant breeding is a complex, long-term, labour-intensive and highly specialised operation. The lead-time for introducing a new wheat variety in Australia is about 10 years. Some of the subject areas involved are genetics, plant physiology, entomology, biochemistry, plant pathology and agronomy.

Plant breeding involves big science and big technology and it requires big investment. The introduction of PVR will give impetus to plant breeding in Australia by providing a financial incentive for the breeding programmes of both private and public concerns.

Distinctions have to be made among crops as to the likely consequences of PVR. The mode of reproduction (sexual or vegetative) and the breeding systems (self-pollinating or cross-pollinating) are highly relevant factors. In cross-pollinating species the introduction of PVR is unlikely to have great impact. The production of hybrids (which do not

breed true from seed) already provides the breeder with an effective mechanism for protecting his investment. It is in self-pollinating crops that breeders will derive most benefit from PVR. However, the financial benefits are likely to be transient because the proposed Australian PVR places no restriction on the use of proprietary varieties as parents once they have been released and other breeders will have ready access to this genetic material. Critics have suggested that PVR in Australia will restrict the availability of germ plasm and restrict the range of varieties, but this argument is unconvincing.

In fact, the encouragement of domestic plant breeding by PVR could well expand the element of consumer choice. It must be stressed that in the matter of plant varieties the final arbiter is the consumer and not the plant breeder. A variety will not be grown if it is unsatisfactory. The introduction of PVR does not carry with it legislation to make the use of particular varieties compulsory. If a variety is deficient in any of its characters, be they agronomic or gastronomic, there is no way in which it can be foisted onto unwilling consumers. Moreover, the interests of consumers are already protected by a range of legislation which, should the need arise, could easily be extended to criteria for new plant varieties.

Very little work has been done, or is being done, in this country on breeding woody perennials and Australia has much to gain from PVR through access to overseas materials. For example, new patented varieties in the US, which are at present unavailable to us, include self-compatible cherries (cross-pollinators not needed, can be grown as single trees), genetic dwarf peaches and a range of new grape varieties including some high quality seedless table grapes. The grapevines, bred at the University of California, Davis, are the result of a 20-year research programme. The university and the California taxpayers are seeking a return on this investment and the proceeds from plant patent will be used to support future breeding programmes in the university.

In ornamentals, our native flora is the source of much horticulturally-interesting germ plasm and this is being exploited in the USA and Israel. The introduction of PVR will provide the financial basis for Australians to invest their time and skill in breeding Australian ornamental plants.

However, it is with the major fruits that PVR will lead to the greatest benefits. At present, very few varieties of fruits are used for commercial production. About 90% of the world's

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Plants Variety Rights and Aust. Horticulture

(Continued from page 8)

apple crop is produced with varieties which arose before 1910, Granny Smith is one example.

In viticulture most of the world's 10.3 M ha of vineyards are planted with varieties which have been perpetuated for centuries by vegetative propagation, and the orange industry is based on only two main varieties, Navel and Valencia.

The breeding of woody perennials presents formidable technical problems and plant breeding in horticulture has made little progress. In broad-acre agriculture new varieties are continually being introduced which are resistant to pests and diseases and which have improved yields. In horticulture we use ancient varieties which have been inherited from earlier generations and which are highly susceptible to a wide range of pests and diseases. We bring these ancient varieties into line with modern requirements by use of very complex production methods. Trees are manipulated by standard husbandry (rootstocks, pruning, training) and by chemical-based husbandry (fungicides, insecticides, nematocides, fertilizers, herbicides, growth regulators) and postharvest treatments are applied to the fruit (controlled environments, pesticides, maturation inhibitors and promoters).

Many horticulturists (but not all) are convinced that high input husbandries must be replaced by simplified systems in which the present excessive chemical controls are replaced by genetic mechanisms. The "Spray and pray" approach, with its risks of toxic residues and damage to the environment, is outmoded and we urgently need new fruit varieties which are genetically-resistant to pests and diseases. We need a massive investment in fruit breeding but fruit improvement is among the least-favoured areas of government sponsored research because it is long-term, speculative, labour intensive and very costly. The prospect of a financial return will provide encouragement for this difficult work in both the public and private sectors.

Much has been made by opponents of PVR of the movement of multi-national concerns into the sphere of plant breeding. It is interesting to speculate on the reasons for this new direction. Could it be that environmental legislation has so stultified the development of new plant protection compounds that the chemical companies concerned are moving into new fields? The cost of research, production and field evaluation of agricultural chemicals is now so high as to deter all but the largest companies from continuing in this sphere.

In addition, the time scale from initial synthesis to commercial release has been greatly expanded. It now takes more than ten years to get a new compound on the market. Nobody would dispute the value of legislation which is designed to protect

human health and the environment, but the positive side of these developments has to be weighed against their agricultural consequences.

The ability of the agricultural chemicals industry to respond to epidemics of new pests or diseases in our major crops has been impaired. In this connection it is, perhaps, timely that multi-nationals are investing heavily in plant breeding and in the transfer of genetic resistance from wild species to cultivated plants.

PVR AND THE THIRD WORLD

Those with personal experience of agriculture in the Third World will be unimpressed by the argument that PVR will constitute an obstacle to food sufficiency in developing countries. Peasant farmers tend to be ignorant but they are not stupid. This fact is often overlooked by Western do-gooders.

If there are no real benefits to be gained from the growing of a particular crop variety peasant farmers will not grow it, a view that is strongly supported by the rapid turnover of hopper-resistant rice varieties in Indonesia. The varieties concerned belong to the same "family" as the rice varieties of the "Green Revolution". IR-28, for example, is thought to have had a working life of only three years. It is just not realistic to suggest that peasant farmers could become the captive market of multi-national seedsmen.

The suggestion that multi-nationals will deliberately produce high-input-demanding cultivars so as to stimulate markets for plant protection compounds and fertilizers in developing countries is absurd. Again, peasant farmers are much

too astute to fall for a such a simple proposition. Those whose lives depend upon their own agricultural production, and whose only significant input is their own sweat, are well able to recognise the true value of a variety, and they care little whether it comes from private enterprise or from a public instrumentality.

Opposition to private enterprise should not be allowed to obscure the realities of plant breeding for Australia or for the Third World. Modern plant breeding involves big science and big technology and it is probably inevitable that it involve big business. The major requirement is for investment so as to accelerate the progress of plant improvement. There is no reason why the private sector, including multi-national concerns, should not play a major part in this important work.

The opposition of the Australian Council of Churches is especially damaging to the cause of PVR and it is also very difficult to fathom. The moral problems which are supposed to attend our use of genes from wild species from the Third World are hard to grasp, but it is doubtful that such abstruse philosophical issues are a concern in the predominantly non-Christian Third World where plant breeding, public or private, is known to pay-off in terms of human welfare.

Despite the dire predictions of its opponents there is good reason to believe that PVR will lead to exciting and worthwhile developments in plant breeding in Australia and that these developments will be of benefit to both producers and consumers.



Season's Greetings



The President, General Secretary and Staff of the Australian Citrus Growers Federation and "Australian Citrus News" extend to all citrus growers and their families and to advertisers, processors and our many readers and friends throughout the Fruit Industry best wishes for a Happy Christmas and a Prosperous 1982.

It's Time to Boost Citrus Research

By Ron Walker, Coomealla

Editor's Note: This article was written for the Sunraysia Citrus Grower Newsletter. However, because of the timely message it contains A.C. News considers it appropriate to reprint it in the National magazine.

The importance of research readily comes to mind when one flips through the pages of information prepared for the field-days at the Dareton and Irymple research stations over the past 10 years.

Topics of note include improved nutrition, biological control of red scale and improved pesticide management, herbicides, hedging, bulk-handling, increased planting densities and under-tree irrigation.

It is not an over statement to say that the contribution of research to the economic development of the citrus industry has been immense.

For this reason the present level of activity in research is cause for some concern.

Citrus research is one of the casualties of the user pays principle developed by such well known bodies as the 'Razor

Gang' in the Federal Government and similar review bodies in State Governments.

In New South Wales, the number of research officers employed in citrus research by the Department of Agriculture is gradually reducing.

In Victoria, citrus research is also declining because of lack of funds. At Irymple, only 20 per cent of the research area at the station is now involved in citrus research. Citrus research within the C.S.I.R.O. is also in a similar position.

The industry will soon have to take an active role in financing research. The practice in other industries has been to set up research funds which may attract dollar for dollar contributions from federal and or state governments.

At the annual conference of the Australian Citrus Growers Federation held at Loxton, in May, a proposal to establish a federal research authority, which would collect funds nationally, was defeated. However, there is scope for citrus growing regions to set up their own funds and finance research applicable to their areas.

If this was done, what could be achieved by further research to assist the Murray Valley citrus industry?

Many topics have been discussed in the past but it is likely that mechanical harvesting of citrus fruit would be a high priority. The promising progress made to date in this field will not be completed without a major research effort.

Many millions of dollars might be saved if the handling of citrus from the point of harvest to the point of sale was streamlined. Research in this field is long over due and seems to be the next logical step to make financial savings in the industry.

Further research is also required into salinity and under-tree irrigation before these subjects will be well understood. Another possibility is nematode control in established orchards. The Victorian Department estimates that yield increases of 27 per cent are possible in some areas by fumigating existing orchards. However there is currently no registered chemical available for this use. Another relevant topic which will grow in importance is the problems associated with replanting an old citrus orchard.

There are possibly many other subjects which growers can suggest. But if citrus research is to be maintained at past levels then it certainly is time for the industry to take some positive action.

Big Growth in Pasteurised Juice Market

The total market for fruit juices in supermarkets has increased in volume from 190 million litres to almost 280 million litres in the past two years.

This 48 per cent increase in volume was accompanied by a 65 per cent growth in value, making the market in 1980-81 worth almost \$190 million.

A major market indeed, and one which seems likely to continue to grow for some time.

The major growth area was the pasteurised room temperature products which almost trebled their volume in two years.

Chilled juices increased by 33 per cent in volume but canned juices declined by 20 per cent in the two years to 1980-81.

As a result, the share of total market held by room temperature juices doubled from 13 per cent to 26 per cent; chilled juices dropped from 71 per cent to 65 per cent and canned from 16 per cent to under 10 per cent.

Indications are that growth of the pasteurised room temperature segment will continue to grow ahead of the market because of its price-convenience benefits.

Obviously normal shelf space is cheaper and more plentiful than refrigerated space, which makes pasteurised juice an attractive buying and selling proposition.

A market worth \$200 million through retail grocery alone is bound to be highly competitive.

In fruit juices, at least 15 identified brands plus house brands compete for about 85 per cent of the market. The rest is made up of minor locally packed products.

Overall leader in the total juice market is Berri. It is market leader in chilled and holds the number two spot in pasteurised and canned fruit juices. Its chilled share is around 21 per cent, a gain of two percentage points in two years.

Sunburst and Patra share second place each with between 15 per cent and 16 per cent of the market.

—Retail World.



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ACGF GIVES EVIDENCE ON TARIFF PROTECTION

(Continued from page 6)

prices in real terms are likely to result in higher levels of assistance and consumer transfer. Accordingly, the BAE recommends that assistance be phased down over an extended period to enable and encourage the industry to achieve productivity gains and longer term cost reductions or to adjust by diversion of some resources into other enterprises or off-farm pursuits.

ACGF will be providing comment to the IAC on the BAE conclusions and recommendations.

IAC VISITS TO CITRUS REGIONS

Following on the Adelaide hearings on November 9 and 10 the IAC Commissioners visited the citrus producing regions in South Australia, the Sunraysia District and the Murrumbidgee Irrigation Area to see at first hand the growing and processing operations.

At Berri they visited the plant of Berri Fruit Juices Co-operative Ltd. and two citrus growing properties were visited in the Mildura district. In the MIA they visited the Research Station at Yanco and saw something of the work being done on closer planting techniques and on mechanical harvesting. While in the MIA they also visited the plant of Leeton Citrus Juices Pty. Ltd., at Leeton, being escorted through the factory by the Managing Director, Mr. John Morris.

THE NEXT STAGE

It is expected that following on its study of the evidence presented to the Inquiry and the supplementary information which is to be provided, the IAC will issue a Draft Report and Recommendations about mid-March 1982. This will be followed by a further public hearing at the end of April when witnesses will be able to comment on and submit further evidence concerning this report.

A final report will then be submitted by the IAC to the Government by the required time of June 30, 1982.

Special book offer for grapegrowers



Writing in Australia's national quarterly magazine "Commercial Horticulture", Viticulture columnist Clarrie Beckingham says about this excellent book 'Practical Viticulture'.

"A recent pleasure was to review the book 'Practical Viticulture' by D. P. Pongracz. Pongracz is a South African fluent in French, German, Hungarian, English, Afrikaans and Russian. With this expertise he has drawn upon valuable European references and texts, which many of us neglect to investigate because we don't understand the language.

'Practical Viticulture' presents all aspects of viticulture to the reader and a very credible feature of the book is the use of clear informative line drawings instead of photographs. The drawings are excellent.

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Report on Seasonal Conditions — October, 1981

VICTORIA

GROWING CONDITIONS

During October weather conditions were mild with below average rainfall in most districts.

In Sunraysia tensiometer readings have indicated that citrus soils have been still relatively wet at 60cm to 90cm depth. These wet sub-soil conditions have highlighted lime induced chlorosis in trees on Trifoliata rootstocks planted in shallow, heavy — lime soils. In many district citrus groves heavy leaf falls have occurred on all varieties and rootstocks except on grapefruit under rostered or private irrigation. The cause of the leaf fall is uncertain but it could be water stress during the beginning of the last autumn.

Zinc and magnesium foliar sprays have been applied.

All varieties have shown heavy flowering.

HARVEST/MARKET

In Cobram and north eastern districts most of the balance of the light Navel orange crop was picked during the first half of the month. In Sunraysia the Valencia harvest has been continuing. Fruit size has remained small.

Market conditions for grapefruit and lemons continued depressed early October, however, towards the end of the month demand improved particularly for good quality lemons.

Ruling prices at the Melbourne Market during October were: Valencia orange \$5 to \$6.50, grapefruit \$4 to \$6, lemon \$6 to \$8 per carton.

—J. E. Kenez
Vic. Dept. of Agriculture

SOUTH AUSTRALIA

Many citrus growers are still reporting leaf drop as a result of salt accumulation from last season. It should stop soon, however, and trees should recover, especially with the good quality irrigation water now available.

Heavy blossoming has been reported from most districts. Growers are still busily installing improved irrigation systems but only a small proportion of them (mainly in the Berri area) are able to obtain the grants available through the E&WS Department for improved irrigation systems installed in recently rehabilitated areas.

Growers have been applying zinc, manganese and urea sprays to trees, and herbicides to ground cover.

Red scale on Valencias is worse than it has been for many years in all Riverland districts. This is thought to be due to a reduction in parasite numbers because of the extremely hot weather last season followed by suitable conditions for a scale build-up. The next few months will tell what the new population of white caps look like and to what extent parasites are active.

Biological Services Ltd., of Loxton, the only commercial supplier of the *Aphytis melinus* parasite, again has insects available this season. If by January the ratio of parasites to scale is not satisfactory, growers will need to strongly consider applying oil sprays. Unfortunately, however, growers who produce mainly juice fruit have little financial incentive to apply oil sprays.

Trial shipments of oranges in C7 (bushel) cartons were sent to New Zealand by Waikerie Co-op. Producers Ltd. The cartons have vertical ventilation slots to do away with the need for dunnage. The company also sent fruit in two bulk containers of 9 x 19 carton capacity to Mauritius.

Export packing is progressing smoothly apart from the problem of small fruit and red scale. From now on, however, fruit quality will need to be watched as the age of the fruit on the tree increases.

NEW SOUTH WALES

Cool and mild conditions with heavy drought breaking rains were recorded in coastal districts. Light falls of rain with mild days and cool nights prevailed in inland districts. Citrus trees blossomed heavily throughout the State and conditions have generally been favourable for initial set and a heavy crop potential in 1982-83. Some leaf drop was reported in several inland districts.

Harvesting of Valencia oranges continued for a strong processing demand but lack of size will slow down the rate of harvest in most districts.

MAITLAND

Hail damage occurred to Unshiu mandarin crops in the Black Hill area. Harvesting of Valencia, lemons and Seminole tangelos continued.

GOSFORD

Good rains have ensured adequate sub soil moisture levels but delayed petal fall spraying. Valencia harvesting continued for both market and processing. Fruit quality is good, but size is below normal in some areas. Lemon processing ceased and approximately 15% of the crop was lost, although some growers were able to dispose of all their lemons.

WINDSOR

The Valencia harvest was completed earlier than normal during the month with average crops and returns being satisfactory. Pest and diseases were at low levels with only minor infections of black spot and melanose occurring. The lemon harvest continued slowly for both fresh market and processing outlets.

NARROMINE

Harvesting of Valencia and grapefruit continued with fruit of good quality and size resulting in good market returns. No serious pest and disease problems have occurred and tree health is satisfactory.

M.I.A.

Due to small fruit size the harvesting of Valencias continued slowly and is approximately 20% completed. Average prices have fallen to \$120 per tonne for processing fruit. A heavy leaf drop mainly at Griffith early in the month resulting in many citrus trees being sparsely foliated. Blossoming was heavy in many varieties and initial fruit set very good. Red scale built up rapidly.

LOWER MURRAY

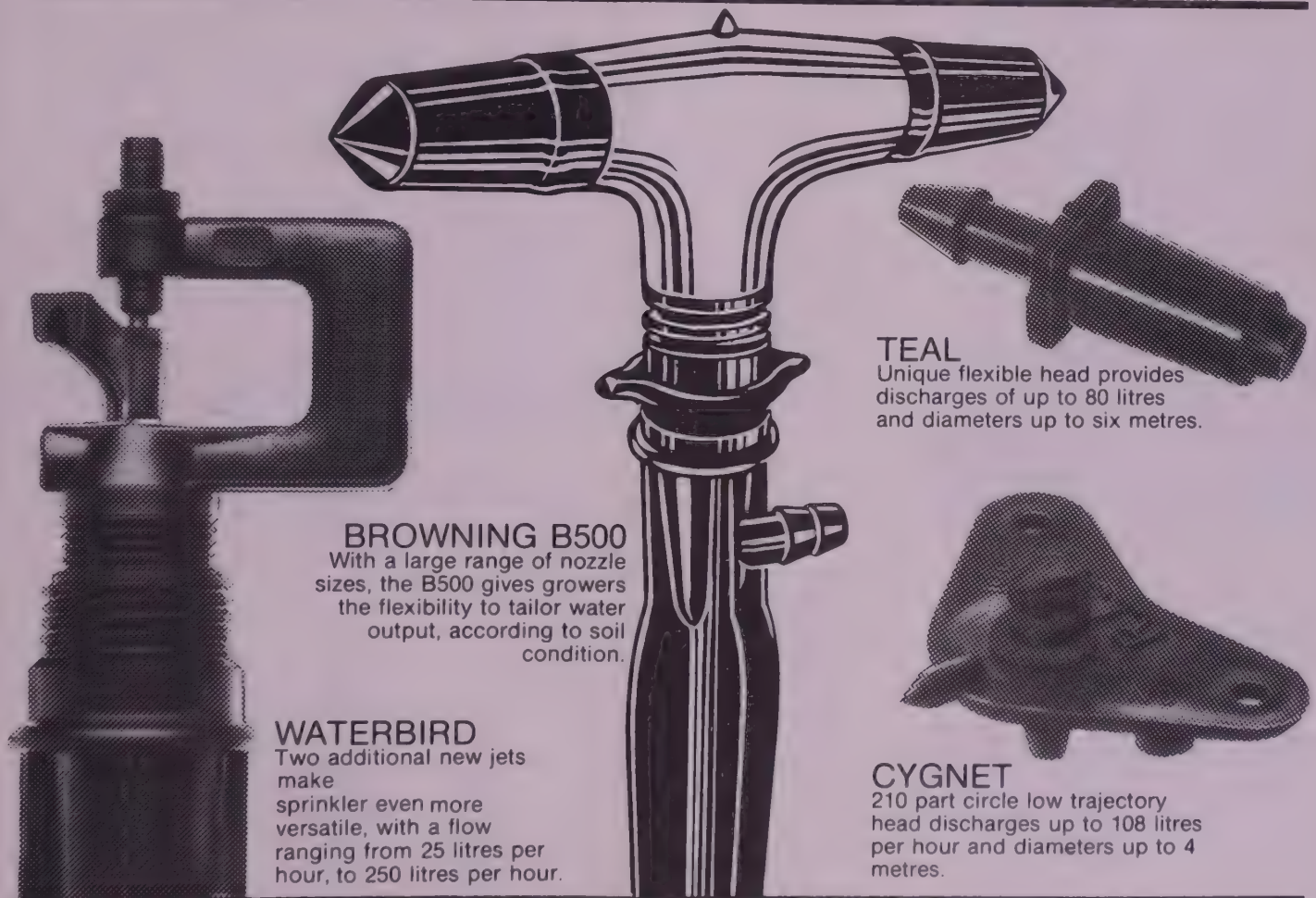
Small quantities of Lanes late navels were harvested and returned \$10 per carton on the market. The Valencia harvest continued but fruit size is below normal and delaying marketing. Only small quantities of fruit was exported to New Zealand. Some heavy leaf drop occurred in the district particularly in navels. All varieties blossomed heavily.

—J. B. FORSYTH
Principal Horticulturist
(Citrus)

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Proposed New Marketing Structure N.Z. Citrus Fruits

By Roger Davies, chairman, NZ Citrus and Subtropical Council Inc.

The New Zealand citrus industry is now of its own choosing without any unifying marketing structure. The dangers inherent in an unco-ordinated marketing approach, without strategies for the promotion, quality control, and distribution of the nation's citrus crop, will be evident to all growers. The image of citrus fruit has been moving back from the 'top end' to the 'lower end' of the market over the last decade and this can only be due to a lack of careful marketing strategy.

Salvaging this situation is something that will test growers' resourcefulness during the 1980s and also their willingness to act together to improve their position as an industry.

The removal of the Citrus Marketing Authority came about because of its own inability to capture the imagination of growers as a unifying market-orientated organisation. The faults were on both sides and growers by their own actions in undermining the Authority's function must bear much of the responsibility for the undisciplined marketing approach which may follow at the growers' peril.

Citrus production continues to move up and concern has been expressed in the Gisborne and Kerikeri districts over the marketing of their citrus crops. An approach was made to Fruit Distributors Ltd., by the New Zealand Citrus and Subtropical Council, exploring the possibility of some liaison which could provide a unifying marketing strategy for citrus growers, on a voluntary basis. This approach was welcomed by Fruit Distributors Ltd., and a proposal from them to form a marketing company with a directorate drawn from suppliers to the company and from the directorate of Fruit Distributors Ltd., was suggested.

This company, when set up, would set quality standards, direct and market fruit, and by levying suppliers, promote a brand of quality New Zealand citrus. Supplying packing sheds would be licensed according to their ability to meet the quality standards and the company would deal with licensed packing sheds which may represent a group or an individual supplier.

Marketing would be performed by the established wholesale marketing system and by its composition, the company should achieve a closer liaison between the grower and his marketing agent.

Administration of the scheme would be undertaken by Fruit Distributors Ltd., of a small charge (suggested 10c to 13c per container) and those advantages of volume freight and purchasing concessions would be available.

Packaging would identify the product by naming the grower, the packhouse and the company. Processing options could be explored for surplus and down-graded fruit and exports would be encouraged, with the company looking to export on its members' behalf.

The effectiveness of the company will be dependent on the percentage of the New Zealand crop represented, and its ability to be innovative in its marketing approach. It is unlikely to be set up until 200,000 bushels of citrus has been committed, a figure which already seems achievable.

I believe that growers should weigh carefully the advantages of this proposed move to rationalise their industry and where interested, should contact their Citrus and Subtropical Council executive member.

Meetings of the Gisborne and Kerikeri Associations have been addressed by Michael Dossor, General Manager of Fruit Distributors Ltd., and myself over the last three months covering the idea in principle and canvassing growers' opinions and suggestions.

—“The Orchardist of New Zealand”

Industry Supports Grapefruit Research

On behalf of the citrus industry ACGF has contributed \$9,350 to CSIRO to enable the final years work to be carried out on the Grapefruit Research Project. This payment will be matched on a dollar for dollar basis by a Commonwealth Special Research Grant from the Commonwealth Government.

The following industry organisations are contributing to the ACGF sponsored project in 1981/82:

Citrus Organisation Committee of S.A.	\$2,500
Citrus Management Co. Ltd.	\$2,500
Leeton Citrus Growers Association	\$750
Mirrool Citrus Growers Association	\$750
Australian Citrus Processors Association	\$1,500
Australian Fruit Juice Association	\$500
Berri Fruit Juices Co-op. Ltd. ...	\$500
ACGF (Special Projects Fund)	\$350
	<hr/>
	\$9,350

This is the third year of the project which was commenced in 1979/80 with the objective of improving the palatability and consumer appeal of grapefruit juice. The industry contributed \$6,500 towards the project in 1979/80 and \$8,000 in 1980/81.

Progress reports received from Dr. Bruce Chandler the CSIRO officer in charge of the project, have so far been encouraging and have indicated that firstly, the high levels of bitterness and acidity in Australian grapefruit juice can be reduced by a simple factory process to improve the quality of the product; secondly, that the bitterness and acidity of Australian grapefruit juice varies greatly between the producing regions; and thirdly, that the time of harvesting has a major bearing on the quality of the processed product.

The 1981/82 program is aimed at:

1. Establishing the viability of various procedures for predicting optimum harvest dates for grapefruit.

2. Further research on the absorptive process for reducing bitterness and acidity to study the activity of the most promising absorbents under continuous operating conditions, to establish their prospective life under repeated usage and to examine their effect on other juice components.

3. Developing methods to overcome the slight loss of grapefruit flavour following treatment with one of the most promising absorbents and to investigate the relative advantages of using mixed absorbents in a single contactor compared with two absorbents in separate contactors.

Fresh Citrus Exports

AUGUST SUMMARY

AUSTRALIAN FRESH FRUIT EXPORTS BY STATES (TONNES)

	Qld.	N.S.W.	*Vic.	S.A.	W.A.	Total
Grapefruit	102.3	1.5	—	5.6	0.1	109.5
Lemons	15.3	59.3	40.3	9.1	40.9	164.9
Mandarins	220.9	25.3	—	2.8	0.2	249.2
Oranges	1227.9	27.0	70.9	1725.7	1.1	3052.6
	1566.4	113.1	111.2	1743.2	42.3	3576.2

*—Includes N.S.W./Vic. Border Areas.

AUSTRALIAN FRESH FRUIT EXPORTS BY DESTINATIONS (TONNES)

	Grapefruit	Lemons	Mandarins	Oranges	Total
PNG & Sol. Islands	1.6	2.6	27.6	61.1	92.9
Pacific Islands	4.4	4.2	3.3	80.3	92.2
New Zealand	—	—	—	401.6	401.6
Singapore	—	43.7	0.2	468.2	512.1
Malaysia	1.6	1.8	—	705.6	709.0
Philippines	0.2	1.2	—	1.9	3.3
Indonesia	0.1	1.0	15.3	157.0	173.4
Hong Kong	—	97.3	17.2	—	114.5
Bahrain	—	—	1.5	—	1.5
U.A.E.	0.1	0.1	1.2	—	1.4
Kuwait	—	—	0.5	—	0.5
Yemen	—	—	—	406.0	406.0
Mauritius	—	—	—	26.3	26.3
Canada	—	13.0	50.2	—	63.2
Holland	43.5	—	—	217.8	261.3
Belgium	28.4	—	—	470.6	499.0
Finland	—	—	29.2	—	29.2
Norway	—	—	41.7	—	41.7
Sweden	—	—	61.3	—	61.3
France	—	—	—	14.1	14.1
U.K.	29.6	—	—	42.1	71.7
	109.5	164.9	249.2	3052.6	3576.2

—Source: Department of Primary Industry.

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Irrigation Storages Report

OCTOBER SUMMARY

STORAGES	Capacity Megalitres	Week Ending 28-10-81 Megalitres
Hume Reservoir	3,038,000	3,012,000
Lake Victoria	680,000	680,000
Dartmouth Reservoir	4,000,000	2,768,000
Menindee Lakes	1,794,000	1,328,000
Burrinjuck	1,026,000	1,015,740
Blowering	1,628,000	1,514,040

WATER FLOWING TO SOUTH AUSTRALIA (River Murray)

Week ending 28-10-81	610,000
Monthly entitlement for October	170,000
Total for October to 28-10-81	2,768,000
Total for September	2,479,000

WATER QUALITY (River Murray)

(Average quality for week — total dissolved solids in parts per million)

	28-10-81	(29-10-80)
Swan Hill	103	160
Euston	104	180
Red Cliffs	121	205
Merbein	124	269
Lock 9	120	342
Lake Victoria	246	294
Berri	126	N.A.
Waikerie	168	468
Mannum	174	378
Murray Bridge	174	390

—Extracts from River Murray Commission Reports and NSW Monthly Weather Review.

NOVEMBER, 1981

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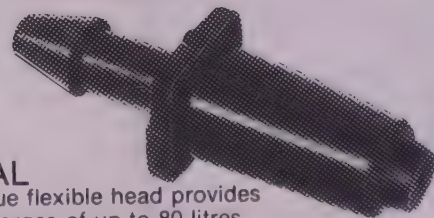


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Valencia Crop Below Forecasts

Revised estimates of citrus production for the 1981/82 season provided by State Departments of Agriculture and ACGF member organizations indicate that the valencia crop will be about 20,000 tonnes (or 8.2 per cent) below the forecasts given in April this year.

The crop, always a light one, is currently estimated to yield 233,000 tonnes compared with the early forecast of 253,000 tonnes, which was already some 20,000 tonnes below the record crop of 1980/81.

Major State variation is in South Australia where a crop of 74,000 tonnes is now expected, 27,000 tonnes below the April forecast and 24,000 tonnes below the 1980/81 record.

The revised forecast for NSW indicates a slight increase.

The reduction in S.A. figures is undoubtedly due to the hot dry summer period of 1980/81 and the fact that the fruit has not sized up in line with expectations.

The revised crop estimate for navels is 110,000 tonnes, down 5,000 tonnes from the April forecast and 50,000 tonnes below the 1980/81 record. The lemon crop is also down with current estimates

being for a crop of 38,000 tonnes. This is 4,500 tonnes below the April forecast and nearly 10,000 tonnes below the 1980/81 figure.

The reduced availability of lemons for processing should help to ease the supply/demand problems of this variety.

Revised crop estimates for mandarins and grapefruit show little change from the April forecasts. A mandarin crop of 28,600 tonnes is indicated and the grapefruit crop is estimated at 30,000 tonnes.

Overall citrus production for 1981/82 is now forecast at 444,000 tonnes, which is 30,000 tonnes less than the April forecasts and 106,000 tonnes below the record 1980/81 season.

EXPORTS

Based on figures provided by the Department of Primary Industry exports of fresh citrus during the nine months to 30 September 1981 have totalled 21,558 tonnes, about 3,000 tonnes below the level for the corresponding period in 1980.

Oranges accounted for 15,548 tonnes, mandarins 4,652 tonnes, lemons 1,112 tonnes and grapefruit 246 tonnes.

Further exports have taken place during the remaining 3 months of 1981 so that final export figures for the year are expected to reach about 32,000 tonnes.

JUICE IMPORT CLEARANCES

Orange juice imports for the 3 months to the end of September 1981 have been the equivalent of 16,000 tonnes of oranges. This compares with about 54,000 tonnes cleared for home consumption during the same period last year.

Lemon juice imports for the three month period are equal to 40 tonnes of lemons and there have been no imports of grapefruit juice during the period.

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Industry Doings

NEW PRESIDENT FOR CENTRAL COAST GROWERS ORGANIZATION

Mr. Rowan Berecny of Mangrove Mountain, NSW, has been elected President of the Central Coast Citrus Growers Organization.

His election followed the recent retirement of Mr. Alan Unitt, who has now taken over the position of Chairman of the Central Coast Agricultural Research and Extension Committee.

ACGF CONTRIBUTES TO S.E. ASIA PROMOTION BOOKLET

ACGF has agreed to provide \$300 towards the cost of a special booklet to be distributed to the importing trade in South East Asia to help those people handling Australian fruits and vegetables to better understand the importance of correct post-harvest storage and handling.

The booklet will be printed in three languages and will be distributed in conjunction with Seminars to be held by the Australian Horticultural Officer — South East Asia during April and May 1982.

Support for the project was unanimously endorsed at the ACGF Delegates Meeting held 3 December in view of the growing importance of S.E. Asia as a market for fresh citrus fruits.

Other contributors will be the Australian Apple and Pear Corporation and the West Australian Exporters Committee.

NEW MEMBERS ON ACGF COMMITTEE

Mr. Gordon Burtenshaw, Chief Executive Officer of the Murray Valley

(NSW) Citrus Marketing Board and the Citrus Fruit Marketing Board (Victoria) and General Manager of Citrus Management Company at Mildura has been appointed to the ACGF Working Committee and the ACGF IAC Sub-Committee.

The Decisions were taken at the half yearly meeting of Delegates held in Sydney on 3 December.

Another new member of the Working Committee as from 1-1-82 will be Mr. Jim Smith, of Somersby, NSW, who will take over the role of Central Coast representative on the Committee previously held by Mr. Fred Walpole.

MICHAEL KEENAN TO REPRESENT ACGF ON CITRUS VIROLOGY TRUST FUND

ACGF has endorsed the appointment of Michael Keenan of Dareton, NSW, as the citrus industry representative on a newly formed Citrus Virology Trust Fund.

The Fund has been established with the balance of monies from the 8th Conference of the International Organisation of Citrus Virologists (IOCV) held in Australia in 1979. These funds amount to \$7,620 and will be invested, with the interest being used to send citrus pathologists to future IOCV Conferences.

Trustees for the Fund will be Dr. G. Evans, Director of Biology, NSW Department of Agriculture, representing the NSW Department and the NSW Minister of Agriculture (Chairman); Dr. L. R. Fraser, representing the International Organisation of Citrus Virologists; Mr. A. Pideman representing

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Review of Mechanical Harvesting of Citrus in Florida

By R. J. Hutton, Research Horticulturist, Agricultural Research Centre, N.S.W.
Department of Agriculture, Yanco, N.S.W.

INTRODUCTION

Citrus is the major tree fruit crop in the United States. The production was approximately 14.2m tons on 486,000 ha in 1978. Oranges are the principal cultivar grown in the major producing states of Florida, California, Arizona and Texas. Production is tending to become more concentrated towards processed products, although the fresh market outlet is still a significant portion of overall production. Florida is the major producing state 10.4m tons on 313.4 kha with 80 per cent of its production processed into products (principally orange and grapefruit). 94 per cent of the oranges and 65 per cent of the grapefruit are processed. The late season Valencia is the most important orange cultivar accounting for about 52 per cent of the orange production. The remaining orange production in order of importance is accounted for by the early and mid-season cultivars Hamlin, Pineapple and Parson Brown.

The Florida Citrus Commission, through legislation, levies growers approximately 1 cent per box of fruit delivered (1 box = 90 lbs). This raises about \$25 million dollars a year of which 10 per cent is allocated for research and the remainder mostly for advertising. Funding for mechanical harvesting research is funded from a separate vote (0.3 cents per box) which allows subsidised operation of mechanical harvest systems by the Commission. It appears that growers are happy to accept this levy as they stand to gain more by using subsidised mechanical harvesting as a lever in bargaining for lower picking

prices paid to migrant hand harvesting crews from Mexico.

Generally, the economics of mechanical harvesting are not too exciting, however the general opinion of researchers and administrators alike in Florida is that it is always better to build new machines and generate real operational data from them rather than to use performance estimates based on assumptions only for feasibility studies. Often estimates have been proven inaccurate and funding for mechanical harvesting research has been withheld, especially where industry grants are involved. Evidence for this was the obvious cessation of funding to some of the U.S.D.A. engineering research projects by local grower and industry organisations because they were not happy with theoretical calculations and predictions. It was stated by one industry official "off the record" that the engineering programme for mechanical harvesting of citrus was really an insurance policy for the citrus industry against labour.

MECHANICAL HARVESTING

Research and development in mechanical harvesting of oranges for processing has been of principal concern in Florida.

Partial mechanisation using mobile picking platforms has been shown to increase manual picker productivity by about 30 per cent. However, this has not been enough to offset the capital cost of the equipment and it also assumes continued labour availability.

Far greater research emphasis is being placed on the development of full mechanization which offers a greater potential for being economically feasible.

(i) ABSCISSION CHEMICALS

The need to reduce the fruit detachment force of mature fruit at harvest time as an aid to mechanical harvesting has resulted in extensive research into the use of abscission chemicals. The most effective of these chemicals (Acti-Aid, Pik-Off and Release) all cause light to moderate peel injury which renders the fruit unacceptable for the fresh market. However, fruit is suitable for processing provided it is utilized immediately after harvest (within 37 hours).

Maximum loosening generally occurs within 3 to 7 days after spray application. However, this is quite variable depending on temperature and humidity conditions following spray application. Nonetheless the Florida Citrus Commission is undertaking the responsibility of final registration of Release (R) for use on citrus as an abscission promoting chemical since it is the best chemical available at present.

(ii) MECHANICAL REMOVAL SYSTEMS

Low fruit removal efficiencies have been achieved with physical contact devices for mechanical fruit detachment. However, it is felt that they may have some application in the harvest of fruit for the fresh market although such devices still remain in very early stages of development.

(Continued on page 5)



Light peel injury caused by abscission chemicals used to promote fruit loosening.

Review of Mechanical Harvesting of Citrus in Florida

(Continued from page 4)

Inertia-type limb shakers developed for citrus, have removal efficiencies in excess of 90 per cent at a harvest rate of 10-40 trees per hour (dependent on fruit bonding strength, tree shape and yield). Use of abscission chemicals increases removal efficiency by 2 to 3 per cent and overall removal rates are improved by between 20 to 100 per cent.

The greatest problem apparent with the use of citrus limb shakers is their reportedly low machine reliability. Also, their use has sometimes had disastrous effects on subsequent "Valencia" orange yields (up to 40 per cent reduction) depending on the stage of development of the young crop at harvest time. Even with these inadequacies, limb shakers have received limited commercial

acceptance in Florida since their introduction in 1966, especially for large trees on seedling rootstocks that are difficult to harvest manually

Several types of air shaker have been investigated over the past 15 years. Compared to the limb shaker, the air shaker has a high potential harvest rate but its performance is heavily dependent on effective loosening of the fruit by abscission chemicals. At a fruit bonding strength of 22.2 N or less, 95 per cent of the crop can be removed at a rate of 70 trees per hour. It uses an air discharge of 65 m/s which is actuated by mechanically driven deflectors to produce a continually changing air direction at the rate of 1 to 1.3 Hz (60 to 70 cycles per minute).

However, although the power requirements and initial costs are high, it is still potentially the most economic means of mass fruit removal (\$/tonne

harvest cost) and is now favoured in preference to limb shaking by the Florida Citrus Commission.

(iii) COLLECTION AND HANDLING

Mechanically detached fruit can either be dropped to a catchframe or directly to a freshly cultivated ground surface depending on the intended utilization of the fruit.

Catchframes have been developed for citrus, but they have not been used extensively because the preharvest fruit drop that usually occurs with the use of abscission chemicals makes preparatory fruit pickup necessary. Hence, ground collection and pick-up systems have been favoured in Florida.

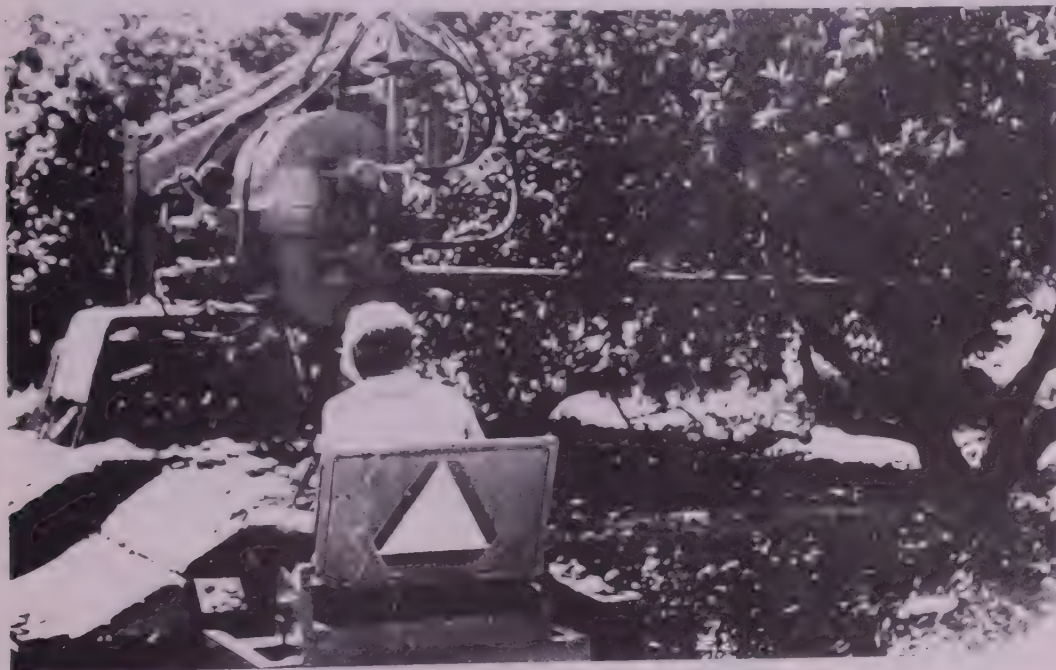
For general use, an oblique side delivery fruit rake with a horizontally mounted rotating brush at its extremity is very effective in windrowing fruit from the centre of the treeline. Performance has been acceptable at ground speeds of 20 to 30 m/min of fruit densities of up to 50 kg/m.

The rod draper pickup principle has been very effective in picking up and cleaning the windrowed fruit. Pick-up rates in the order of 200-400 kg/min have been achieved although this has been considerably affected by ground conditions.

(iv) HARVEST SYSTEMS

Several complete mechanical harvest systems using either the limb shaker or air shaker have been operated on a limited commercial basis over the past 10 years in Florida. This has been subsidised by the Florida Citrus Commission. Harvest cost with these systems has compared favourably with manual systems in early and midseason oranges. However, mechanically harvested fruit usually have more injuries than manually

(Continued on page 6)



Prototype Inertia-type limb shaker.



Experimental Air Shaker designed and constructed at the N.S.W. Department of Agriculture's Glenfield Agricultural Engineering Centre.

Review of Mechanical Harvesting of Citrus in Florida

(Continued from page 5)

harvested consignments. These appear as splits, internal and external bruising and superficial peel scars.

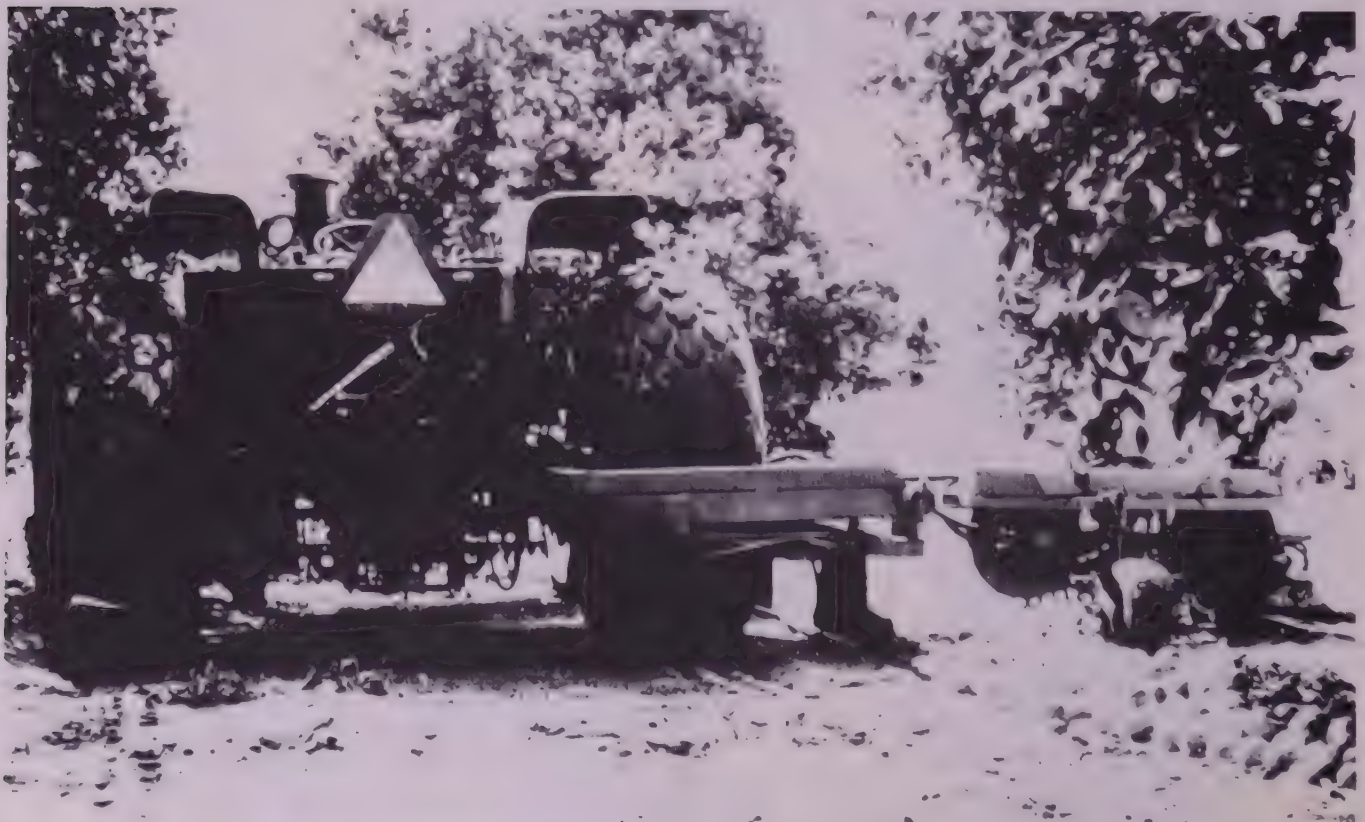
Experimentally, shaker-catchframe harvest of fresh market oranges and grapefruit appears to have potential if the

injured fruit are graded out. However, the present levels of fruit injury sustained in mechanical harvest have been too high for industry acceptance using either manual and colour sorting grading facilities.

(Extracted from: Hutton, R. J. "Research on High Density Plantings of Pome and Citrus Fruits and Orchard Mechanisation in U.S.A.-Report on Overseas study tour February/March, 1980").



Prototype fruit rake used to windrow mechanically detached fruit ready for pick up.



Citrus catchframe developed in Florida for use with limb shakers.

Further Term for COC Chairman

The chairman of the Citrus Organization Committee of South Australia Mr. Perc Sanders will continue as chairman for a further three year term.

This announcement was made by the S.A. Minister of Agriculture, Mr. Ted Chapman, at the COC Annual Meeting held at Barmera on 29 November.

In his address to the Annual Meeting, Mr. Chapman stressed the importance of the current IAC Inquiry on Orange and Tangerine Juices. He said that the State Government believed the variable tariff

arrangement should be continued and that the period of assistance should be extended beyond the normal three year term with the level of tariff support being reviewed annually.

The Minister congratulated COC on their involvement in promotion and research and said that the Committee's contribution to the Department of

Agriculture research programs had grown to almost 400 per cent in the past three years.

2 DEC 1982

In answer to a question during the meeting the Minister said that primary producers and the public in general did not fully understand the importance of the tariff and its effect on the industry. He said there was an area of confusion which was not helped by those currently promoting the abolition of tariffs and there was therefore a need for the education of the public to explain the problems experienced by the industry in competing with overseas low-cost producing countries.

In the COC Annual Report, the Chairman, Mr. Sanders, made specific reference to several matters of importance to the future of the S.A. citrus industry. There was the continuing need to get maximum benefit for the industry from the domestic fresh fruit market in S.A.; the sale of citrus fruit by weight; the need for consumer education; the need for an extension of the existing tariff arrangements; and the continued development of export markets for S.A. citrus fruit.

The meeting was well attended by citrus industry representatives from S.A. and the Sunraysia District and officers of the S.A. Department of Agriculture. Attending on behalf of ACGF were the President, Mr. Walker and General Secretary, Mr. Hugh Cope.



Studying some notes at the COC annual meeting, at Barmera, are from left, the chairman of COC, Mr. P. T. Sanders, the S.A. Minister of Agriculture, Mr. Ted Chapman and the president of the Australian Citrus Growers Federation, Mr. Harry Walker.



Rod-draper Citrus Pick-up Machine

Tariff Protection Must Be Dealt With On Individual Industry Basis

The question of tariff protection to industry needs to be looked at on an individual commodity basis and cannot be considered "across the board".

The President of the Australian Horticultural Growers Council, Mr. Hugh Cope said this when presenting the Annual Report to the Council's Annual Meeting held in Sydney during November.

He said that where a particular industry required a level of protection to be maintained or increased, in order for that industry to maintain its economic viability, then assistance should be provided along those lines.

He said that the Australian horticultural industry was very efficient by world standards but could not compete with overseas producing countries because of severe cost disadvantages beyond the control of Australian producers.

Many of these industries were vitally dependent on tariff protection and this protection would continue to be necessary if Australia is to maintain a strong fruit and vegetable industry.

Details of the Annual Report are as follows:

INTRODUCTION

The year under review has again been an active one for the Council with attention being given to many issues which are of general interest to horticultural producers.

Of major importance in this regard was the involvement on the negotiations aimed at establishing closer economic relations with New Zealand. This is an important exercise for the Council and provided an excellent illustration of the role which can be played by the Council in co-ordinating industry policy and attitudes on major general interest issues.

Although the Council has continued to suffer from limited financial resources which restrict its capacity to deal effectively with industry issues, it has maintained a high level of activity in monitoring action being taken by the Commonwealth Government, and other matters which affect the industry, such as IAC Inquiries etc.

In this day and age, with the increasing involvement of Government in industry matters, it is extremely difficult for any industry to achieve new ground. Maximum effort is therefore necessary to maintain ground which has been obtained and avoid further decline in the economic viability of the industry. The Council is continuing to work in this direction to the best of its limited capacity.

The subject of tariff protection continues to be a live issue. The Council must continue its efforts to ensure that

Governments, the media and the general public are aware of the importance of tariff protection to the economic survival of many of our horticultural industries, which provide essential commodities for daily use by the community.

In this context it is important that the question of "general reductions in tariff protection" are only looked at on an individual commodity basis and are not considered in an "across the board" sense. Any desirable adjustments must, of necessity, be carried out on a very gradual basis and, where it can be shown that a particular industry requires the level of protection to be maintained or increased, that appropriate action is taken along those lines.

In 1979/80 the gross value of horticultural production in Australia exceeded \$1 Billion for the first time.

This is a major achievement for the industry and horticulture now ranks fourth in the value of agricultural production behind livestock slaughtering, wheat and wool.

Because the industry has now reached this landmark, the Council must accept the challenge to develop its activities and resources so that it can effectively plan its role in representing the general interests of horticultural producers.

With this in mind the Executive Committee has placed certain recommendations before the annual meeting which are aimed at strengthening the Council's Secretariat base, and providing for an increased level of media and public relations activity during the coming year.

However, if the Council is to be developed into a truly effective organisation to adequately represent the industry, it will need the full support and backing of horticultural producers in the future.

APPRECIATION

Appreciation is conveyed to the many Parliamentarians and Departmental officers who have assisted the Council throughout the year.

Sincere thanks also go to the members of the Executive Committee for their support and co-operation and to the members of the Council for their assistance on industry matters during the year.

SECRETARIAT

For the calendar year 1981 the Council again contracted Brian Newman and Associates to provide professional

management and secretarial services to the Council. On behalf of the Council I convey thanks to Brian Newman for the professional manner in which he has carried out his duties on behalf of the Council during the year.

OPERATIONS

This has been an especially busy year for the Council due to activity related to the question of closer economic relations with New Zealand.

This question more than any other in recent times has highlighted the need for and the value of the Council. It is interesting to note that the Council received the active support of groups that are not members of the Council in its endeavours on this important issue.

During the year we have been pleased to welcome two new Associate members. The Winegrape Growers' Federation of Australia and Macadamia Plantations.

MEETINGS

The General Council met on two occasions, November 13, 1980 and June 25, 1981. Both meetings were held in Sydney.

The Executive met on four occasions during the year, January 14th Sydney, March 18th and 19th Canberra, April 29th Canberra and August 27th Sydney.

The Canberra meetings included discussions with the Minister for Primary Industry and the Department of Primary Industry on the question of closer economic relations (CER) with New Zealand.

The January 14th meeting in Sydney was a general meeting of all horticultural bodies to establish an industry policy on the CER.

The Executive Officer attended a meeting of the Australian/New Zealand Businessmen's Council in Melbourne on 18th May 1981.

COUNCIL ACTIVITIES DURING 1980/81

As can be judged from the meeting schedule the Council has been active on a wide range of issues during the year.

● Closer Economic Relations with New Zealand

In early December 1980 Executive Member Gordon Wilson attended talks in New Zealand as part of a National Farmers Federation delegation to discuss the principles of the CER.

(Continued on page 9)

Tariff Protection on Individual Industry Basis

(Continued from page 8)

It was agreed that horticultural industries needed to be concerned at proposed provisions in the CER that could have serious detrimental effects on Australian growers.

A meeting of all interested groups was called in Sydney on 14th January 1980 and was attended by over 65 people from all sectors of the industry including the Department of Primary Industry and State Departments of Agriculture and Mr. Bruce Lloyd MHR.

This meeting agreed that a working party be formed and requested the Department of Primary Industry to prepare the necessary background information that would allow the working party to develop policy guidelines.

The industry's concern over CER was conveyed to the Minister for Primary Industry.

On the 18th and 19th March 1981 the Working Party met in Canberra with representatives of the D.P.I. and presented a detailed submission and a clear statement of policy on behalf of the horticultural industries.

The policy statement on behalf of the industry reads as follows:

"Having studied the background notes on assistance measures available to the industries of both countries this meeting reiterates the policies defined of the meeting in Sydney on January 14th, 1980 and subsequently conveyed to the Minister for Primary Industry and requests that clear guidelines must be established for the equalising of trading opportunities for the industries of the two countries as from an agreed common date and before any agreement is reached on CER. In this context the meeting requests that export incentives, the export performance taxation incentives and other assistance measures be either equalised, neutralised or excluded as from the agreed common date; that the tariffs and quantitative restrictions on Australian exports to New Zealand be removed as from the agreed common date; that a uniform exchange rate apply for trade between Australia and New Zealand; and that adequate anti-dumping procedures be provided for under any such agreement.

To accept anything less than these conditions would seriously jeopardise the future viability of Australian horticultural producers, and the self sufficiency in the production of essential food for all Australians."

Subsequently on the 29th April in Canberra this policy statement was formally presented to the Deputy Prime Minister and Minister for Trade Mr. Doug Anthony and the Minister for Primary Industry Mr. Peter Nixon.

Both Ministers indicated their ap-

preciation of the Council's efforts in establishing a clear and concise industry view on the complex matter of a C.E.R. The Council has continued to monitor this subject during 1981.

On the 18th May 1981 the Executive Officer represented the Council at a meeting of the Australian/New Zealand Businessmens Council.

Major item for discussion was the C.E.R. however, little discussion took place and it is obvious that manufacturing business interests do not have the same concern about the C.E.R. as the horticultural growers.

- **Plant Variety Rights Legislation**
This subject continues to play an important role in the Council's activities.

The Council has made its policy clear at both the State and Federal Government level.

The Council supports the speedy introduction of PVR and has urged both State and Federal Ministers of Agriculture/Primary Industry to enact the necessary legislation.

Indications are that support for PVR is waning in some States and it will therefore be important for the January 1982 meeting of the Australian Agri-

cultural Council to reach agreement on the scheme.

It will be to the long term serious disadvantage of this industry if PVR legislation is not implemented in Australia at the earliest possible time.

- **Sales Tax Exemptions**

An approach has been made to the Treasurer to review and update the existing schedule of exemptions for goods used in agricultural production.

Over the past few years advances in technology have required the purchase of new and improved items of equipment. In many cases these are not included on the exemption schedules.

We have also made it clear that the Council believes that production, with respect to horticulture, includes the growing, harvesting and preparation of produce for presentation to the market.

- **Harvest Labour Income Tax Deductions**

This matter was referred to the Council following Taxation Department enquiries in the Orange area of N.S.W.

(Continued on page 10)

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Tariff Protection on Individual Industry Basis

(Continued from page 9)

Growers have been placed in an invidious position with respect to making income tax deductions from the wages paid to seasonal harvest labour. Efforts have been made to have a more effective tax scale (as presently operates for shearers) introduced for seasonal harvest labourers.

We are awaiting response from the Taxation Commissioner on this matter.

● Water Quality — Murray-Darling System

The Council has expressed its concern at the deterioration in water quality in the Murray Darling river system.

Both quality and quantity have declined seriously over the past few years and urgent action is required on a Federal level.

The Council is aware of the important role played by the Murray/Darling River system with respect to horticultural production in many areas.

With this concern in mind a resolution was formulated and passed to the National Farmers Federation with a request that it be raised at the October meeting of the NFF Council.

The resolution read:

"that in the interests of ensuring the future efficiency and effective use of a vital sector of Australia's water resources, which is of the utmost importance to the production of food and other rural commodities, the NFF requests the Commonwealth Government in conjunction with the state governments of NSW, Vic, Queensland and South Australia to develop, as a matter of urgency, the necessary Commonwealth and complementary state legislation and if necessary by way of a Federal referendum, to establish a Murray/Darling River Authority (MDRA) for the purpose of totally managing the Murray/Darling river system."

● Commonwealth Extension Services grants (C.E.S.G.)

The Council has been concerned for some time that there may be action by the Federal Government to remove the grants made to State Departments of Agriculture specifically for extension services.

On a number of occasions the Council has raised this matter with both the Minister for Primary Industry and members of the Government Rural Committee.

Announcements in the 1981/82 budget caused some concern as the Government announced that the CESG scheme would be terminated and that funds paid to states in the future would be part of the overall grant.

The Council continues to believe that

agricultural research and extension is of vital importance to its members and has therefore requested the Minister to review the government's decision and to again make funds available to the State specifically for extension services.

● EEC Farm Lobby

Following an approach from the Cattle Council of Australia for support for the establishment of a farm based lobby in the EEC the Council gave consideration to this matter.

In principle the Council supported this positive approach but was unable to offer any other material assistance.

● Phosphatic and Nitrogenous Fertilizers

The Council presented a submission to the Industries Assistance Commission (IAC) at its hearing in Melbourne on July 16th 1981.

The Council placed the following requests before the IAC.

That the nitrogenous fertilizers subsidy be set at an ad valorem level of 20 per cent of the manufacturers ex works price of urea or of the importers selling price at the port of entry.

The subsidy on mixed nitrogen containing fertilizers be set at a rate per tonne of nitrogen content equivalent to that provided by the ad valorem bounty of 20 per cent on urea.

That the bounty on superphosphate and phosphate rock prepared for use as a fertilizer be set at an ad valorem rate of 20 per cent of the manufacturers ex works price for bulk material.

In the Council's submission emphasis was placed on the value of an adequate and correctly balanced fertilizer program to maintain both level and quality of production.

● Fruit and Fruit Products (IAC)

The Council, having presented a submission to the IAC on the above subject, monitored the IAC Draft reported and attended the final hearings of the inquiry.

Concern was expressed at the reduced level of tariff recommended for cherries and at the flat rate of 10% tariff recommended for other fruits.

Concern was also expressed over the recommendations on jams, which are already allowing large volumes of low priced jams in from European countries.

The IAC commented favourably on the proposed idea for a General Horticultural Panel — however to date

nothing positive has occurred on this issue.

● Council Newsletter

Again during 1981 the Council continued to produce and distribute "News Line".

A number of industry magazines are taking up the information contained in the newsletter and reprinting it and this is greatly increasing our reach to the industry.

Whilst this remains a minimum operation it is a positive step towards keeping the average grower better informed about the Council's activities and important issues.

● National Farmers Federation (NFF)

The Council has maintained its associate membership of NFF and has been represented at all meetings of the Council.

In December 1980 the Council was invited to participate in a delegation to New Zealand to meet with farmer organisations to discuss the implications of closer economic relations.

The Council accepted this invitation and Mr. Gordon Wilson represented the Council at this important series of meetings.

● Tariffs and Trade

Whilst the Council is in close agreement with many issues acted on by NFF there has been a lack of support by the Council for the NFF policy on a general reduction of tariffs.

The Council has strongly disagreed with the NFF's approach for a general, across the board reduction of tariffs as it believes that domestically producing industries such as horticulture would be seriously disadvantaged.

The Council has recommended a selective approach to tariff reduction with a careful assessment of the likely impact on high risk industries.

We have every reason to believe that the Government is aware of the possible problems to our industry by a general reduction in tariffs.

● Government Rural Committee

The Council continues to receive valuable help and assistance from the Government Rural Committee under the Chairmanship of Mr. Geoff Giles MHR.

Many members of this Committee have a special interest in horticulture and we express our thanks to them for their willingness to meet with representatives of the Council to discuss various problems.

—HUGH COPE,
President.

DECEMBER, 1981

Riv-Sam Receives Export Award

Riv-Sam Pty. Ltd., the citrus exporting co-operative of Berri, South Australia has won an Export Award for Outstanding Export Achievement in 1981.

Awards were made to 20 Australian firms at a special presentation in Canberra on 4 December.

Winners are selected by an Awards Committee comprising representatives of major industry organisations and the Department of Trade and Resources. The awards are jointly sponsored by the Confederation of Australian Industry and the Department.

The awards program has been a yearly event since it began in 1963.

Riv-Sam Pty. Ltd., exports citrus fruits, mostly navel and valencia oranges, lemons, grapefruit and mandarins.

Overseas sales in 1980-81 totalled more than \$6.6m, of which New Zealand and South-East Asia each accounted for more than \$3m. The firm, wholly-owned by a number of co-operatives and private packers, is pursuing new markets in the Middle East, including the Gulf Region. Its first sales to the market in 1980-81 totalled more than \$98,000. European sales earned \$175,000. Overseas market development, mainly travel and promotions, has cost \$250,000 in the past two years. The firm works through local agents, using television and radio advertising extensively. Remoteness from Europe and the Middle East imposes freight disadvantages which are offset by selling there during the Northern Hemisphere winter when 'out of season' fruit is at premium prices. Export cartons and boxes are designed to use maximum container capacity without pallets, manual container stuffing helping to keep freight costs down. Riv-Sam has developed expertise in scheduling harvesting, packing and shipment of fruit to ensure retention of quality.

The citrus industry has featured well in previous awards. Golden Mile Orchard Pty. Ltd., of Mundubbera, Queensland, won an award in 1975 and also received meritorious acknowledgement of its export achievements in 1970.

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Stability of the Vitamin C Content of Commercial Orange Juice

By D. MASSAIOLI and P. R. HADDAD

Seven brands of orange juice have been analysed for their ascorbic acid content over a 14-day period during which they were handled under conditions similar to the home. The ascorbic acid content was found to decrease slightly during storage, with the loss of ascorbic acid being dependent on the handling method used. Six of the brands tested contained sufficient ascorbic acid at the end of the study to approximately meet the minimum requirements for unopened juice.

Advertisements for orange juice usually describe the product as a source of vitamin C necessary to meet human daily requirements. This claim is based on a minimum vitamin C content of 40 mg/100 ml juice (National Health and Medical Research Council 1975). Since ascorbic acid is a rather unstable substance undergoing aerobic oxidation catalysed by cupric, silver, ferrous and stannous ions (Gyorgy & Pearson 1967), it is possible that the ascorbic acid level of orange juice will be dependent on the rate of consumption of the juice, the method of handling and storage and the nature of preservative used.

The stability of ascorbic acid in beverages has been studied for a wide variety of products and containers. Conditions of storage and their effect on ascorbic acid stability were investigated (Bissett & Berry 1975) and it was found that the temperature of storage and the type of container used influenced ascorbic acid retention. Further studies have indicated that ascorbic acid stability in reconstituted orange juice was not dependent on refrigeration (Lopez, Krehl & Good 1967) or the amount of light reaching the sample, but that storage time after reconstitution was the most important factor (Andrews & Driscoll 1977). A comparison of ascorbic acid retention in naturally derived orange juice and reconstituted juice (Beston & Henderson 1974) showed that ascorbic acid stability was similar in both products. This study also demonstrated

that the loss of ascorbic acid was accompanied by an increase in the level of dehydroascorbic acid (which is an active form of vitamin C) except in canned orange juice, where the presence of metal ions was believed to catalyse further degradation of dehydroascorbic acid. It has also been reported (Haddad 1977) that the ascorbic acid content of preservative-free juices was somewhat less stable than that of juices containing preservatives. The present study reports on the stability of ascorbic acid in a range of commercial juices when the juice is stored and handled under conditions similar to those encountered in the home. The manufacturers of the juice sampled had used a variety of preservation methods and several different types of containers.

The juice was analysed for ascorbic acid by a titrimetric procedure using 2, 6-dichlorophenolindophenol (2, 6-DPIP) as titrant and as indicator. This reagent reacts with ascorbic acid via a redox process, and the titration is therefore susceptible to error from other mild reducing agents present in the solution, especially SO₂, which is sometimes used as a preservative in the juice. The interference of SO₂ can, however, be masked by addition of a small amount of formaldehyde which does not interfere in the 2, 6-DPIP titration. This titrimetric procedure was selected as the analytical method in view of the large number of analyses required — up to 70 per day. The inherent errors in the method are of

limited significance in a study as this where comparison of results, rather than their absolute magnitude, forms the basis of any conclusions reached.

MATERIALS AND METHODS

Seven brands of juice were selected as being representative of the range of containers and preservatives used by juice manufacturers and details of these products are listed in Table 1. Two one litre containers of each juice were purchased and decanted separately into two sealed glass or PVC storage vessels, labelled A and B, and stored in a refrigerator at 3°C. All the samples labelled A were swirled gently and inverted twice daily, whereas those labelled B were shaken vigorously for 5 seconds twice daily. This procedure was adopted so that the effect of different handling procedures on ascorbic acid stability could be determined.

Samples were treated as follows before titration. A 70 ml aliquot of juice was poured from the container, 0.2g of oxalic acid added and the juice gently swirled. The sample was then filtered using Celite as filter aid and 5 ml aliquots of filtered juice were pipetted into conical flasks and 30 ml of distilled water added. For brands 4, 5 and 7 (which contained SO₂), 2 ml of a 1:1 mixture of 40% formaldehyde and 2M H₂SO₄ was also added to each aliquot before titration. Solutions

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Table 1. Stability of the ascorbic acid content of commercial orange juices

Ascorbic acid content (mg/100 mL)						
Brand	Packaging	Preservative present	Handling method*	Initial†	Final‡	Loss
1	Tinplate	None	A	53.0	46.5	6.5
			B	56.7	46.5	10.2
2	Cardboard carton, coated	None	A	44.9	41.1	3.8
3	PVC	None	B	45.0	39.0	6.0
			A	65.5	54.5	11.0
4	PVC	Sorbic acid, calcium sorbate, SO ₂ , trace	B	62.1	48.4	13.7
			A	43.7	40.4	3.3
			B	42.5	38.3	4.2
5	Cardboard carton, coated	Sorbic acid, benzoic acid, SO ₂ , trace	A	71.6	67.4	4.2
			B	73.1	60.3	12.8
6	PVC	Sorbic acid, sodium benzoate	A	44.4	38.3	6.1
7	PVC	Sodium benzoate, SO ₂	B	51.2	42.3	8.9
			A	29.5	24.6	4.9
			B	27.5	22.0	5.5

* Method A involved daily gentle swirling. Method B involved daily vigorous shaking

† — Measured immediately after opening purchased juice

‡ — Measured after 14 days storage; decrease was approximately linear with time over the 14-day period.

Horticultural Trust Awards Announced

Two horticultural researchers, one operating in the field of greenhouse climate control and another in vegetable crop production will be the recipients of awards for 1982 made by the Horticultural Congress Trust.

They are Mr. K. V. Garzoli, Experimental Officer of the Division of Irrigation Research, Griffith, NSW and Mr. M. E. Titley, Lecturer in Horticulture at the Queensland Agricultural College at Gatton.

The awards are for \$1,500 each, to assist the recipients to attend the XXIst International Horticultural Congress to be held in Hamburg in August next year.

The Horticultural Congress Trust was set up in 1979 utilising surplus funds from the successful XXth International Congress held in Sydney in 1978.

Mr. Keith Garzoli is a Bachelor of Mechanical Engineering and Master of Engineering. In recent years, he has been specialising in low energy greenhouse research an area in which he has made significant contributions. His attendance at the Congress will enable him to gather information related to energy research in horticulture, particularly greenhouse climate control which he currently estimates to cost the Australian nursery industry about \$60,000 per hectare per year.

Mr. Michael Titley, a Bachelor of Agricultural Science was involved with commercial vegetable research and production prior to taking up his present teaching and research position in Queensland. He is currently involved in research dealing with crop scheduling of vegetables. This is an area where there have been significant advances overseas and which are likely to be of benefit to Australian growers.

In announcing the awards, the Chairman of the Trust, Mr. G. R. Gregory, said that he and his fellow Trustees were disappointed that income from invested funds was insufficient to permit the granting of more than two awards. There were many deserving applications in the total of 52 received, he said.

Mr. Gregory foreshadowed an appeal to industry organisations and firms involved with horticulture, for additional funds to build up capital investments of the Trust. Only in this way would the Trust be able to significantly increase the number of awards to be offered in 1986 for assistance to attend the XXIInd International Horticultural Congress which is scheduled for Davis, California.

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Horticulture Withdraws from NFF

The Australian Horticultural Growers Council has decided to withdraw from Associate Membership of the National Farmers Federation at the end of this month.

The decision was taken at the AHGC Annual Meeting held in Sydney on 24 November.

The limited finances of the Council is the major reason for the decision. The Council operates on a budget of just \$14,000 a year and as yet has been unable to devise an effective system for collecting the finance needed to carry out the operations of the Council on a basis in keeping with the importance of this billion dollar industry.

The cost of Associate Membership of NFF has been costing \$3,000 per year and as from 1982 will increase to \$4,000. The Council, which represents interests ranging from nurserymen and mushroom

growers to citrus and apple growers, has been a non-voting associate member of NFF since 1979.

The Associate Membership was offered to the Council as an interim measure while AHGC explored opportunities for the collection of levies etc., which would enable the Council to take up its full voting entitlement in NFF.

NFF took the decision early this year that the Council should accept responsibility for full membership equal to one vote by 1 January 1983 (estimated cost \$10,000) and two votes by 1 January 1985 (estimated cost in excess of \$20,000).

Accordingly, AHGC has reached the decision it is unable to see its way clear to meet these targets and has withdrawn from NFF membership.

The Council has decided to allocate the additional funds available as a result of the decision, to a public relations program to tell Australia's 35,000 horticultural producers about the work of the Council; its objectives and policies; and to also provide information to the media and to Governments about these matters.

This project will be aimed at building up the operations and image of the Council and this is now seen as a major priority for the immediate future.

Undoubtedly, an additional factor which triggered the decision to withdraw from NFF rather than seek continued Associate Membership, was a fundamental clash on policy over the question of tariff protection.

This was brought to a head by the NFF demands earlier this year for an across-the-board tariff cut as part of an economic package of proposals to the Commonwealth Government.

The Council's policy is for tariff protection to be considered on an industry by industry basis and that where it can be shown that an industry needs continued high levels of protection in order to maintain its economic viability, then that industry should continue to receive that protection.

This clash of policy highlights the problems that NFF is facing in trying to encompass conflicting sectional views within its overall protection policy.

Because of the Council's concern about this clash of policy AHGC invited Mr. David Trebeck, the Deputy Director of NFF, to attend the annual meeting for discussions on the matter.

OTHER ANNUAL MEETING DECISIONS

Fertilizers:

The Council noted with some concern that the IAC in its Draft Report on Superphosphate and Nitrogenous Fertilizers has recommended that all fertilizer assistance should end on June 30, 1984. The recommendation is that the rates of respective bounty and subsidy assistance until that date should remain at the current levels, i.e., \$12 per tonne for superphosphate and \$20 a tonne of contained nitrogen for nitrogenous fertilizers.

In its evidence to the IAC the AHGC asked that the assistance should be continued; that the rate of subsidy on nitrogen should be set at an ad valorem level of 20 per cent of the manufacturers ex-works price of urea; and that the bounty on superphosphate should be at an ad valorem rate of 20 per cent of the manufacturers ex-works price for bulk material.

Closer Economic Relationships with N.Z.

The annual meeting was addressed by Mr. Dick Coutts, Assistant Secretary, Department of Primary Industry on the current position in respect to the negotiations for closer economic relations with New Zealand.

Mr. Coutts indicated that while common ground has been established on a range of matters, a number of significant issues remain to be resolved before it can be said that there is an agreed agricultural package.

He said that further work was necessary and an agreed package was not expected to emerge until 1982, at which time there would be full public consultation before decisions were taken by the Government.

Election of Officers

The election of officers for 1981/82 resulted in the following:

President: Mr. Hugh Cope (Australian Citrus Growers Federation); Vice-president: Mr. Len Cochrane (Australian Vegetable Growers Federation); Executive Members: Mr. Don Kidd (COD — representing tropical fruits), Mr. John Miller (Australian Mushroom Growers Association), Mr. Gordon Wilson (Australian Vegetable Growers Federation), Mr. Bruce Owen-French (Australian Nurserymen's Association).

Brian Newman and Associates of Melbourne have again been appointed as the Secretariat for 1982, with Mr. Brian Newman acting as Executive Officer.

Industry Doings

(Continued from page 3)

the S.A. Department of Agriculture and the S.A. Minister of Agriculture; and Mr. Michael Keenan representing the citrus industry.

* * * * *

CMC CLOSES RENMARK OFFICE

The Renmark Office of the Citrus Management Company Ltd., is to be closed from December 31.

All marketing functions will in future be centralised at Mildura with market reporting, statistical and supporting activity being issued from that office.

As from February 1, 1982 CMC will have a full time representative in the Sydney terminal market.

* * * * *

OUTLOOK CONFERENCE — CANBERRA — JANUARY 1982

The National Agricultural Outlook Conference for 1982 will be held in Canberra from 26 to 28 January.

A special session will be devoted to citrus and outlook papers will be presented by the Bureau of Agricultural Economics and the industry. The industry outlook paper will this year be presented by Mr. Michael Keenan, Chairman of the Murray Valley (NSW) Citrus Marketing Board and the representative of non-canning fruits on the Fruit Industry Sugar Concession Committee.

Stability of the Vitamin C Content

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were titrated with 10.3M/2,6-DIPP which was standardised daily with freshly prepared 10.3M/ascorbic acid solution. Samples of group A and group B were analysed on alternate days over a 14-day period, with at least five replicate titrations being performed for each daily analysis.

RESULTS AND DISCUSSION

The results are shown in Table 1 which lists the initial and final concentrations of ascorbic acid over the course of the study. More detailed data are not deemed necessary since the decrease in concentration with time was approximately linear in all cases. The precision of the titrimetric procedure was found to be good, with an average relative standard deviation of 1.12% for the replicate titrations performed each day. It was also observed that the concentrations of ascorbic acid initially present in the two containers of each brand were in close agreement (except for brand 6) and that all brands (except brand 7) complied with the minimum ascorbic acid content of 40 mg/100 ml juice when the container was first opened, although the content in some samples fell below this level after 14 days.

The loss of ascorbic acid was greatest when the juice was shaken vigorously each day; however, all of the brands tested (except brand 7) contained sufficient ascorbic acid at the end of the study to approximately meet the minimum requirement for the juice when sold. It is not justifiable to relate the results obtained to the nature of the preservatives and packaging used because of the additional unknown variable of conditions of storage before the juices were examined. Effects of poor storage

conditions on orange juice quality may continue after the conditions have been improved, therefore, it is not safe to compare juices without knowledge of their previous history. This point is emphasised by the low ascorbic acid content of brand 7 juice, marketed by a company with a good reputation in the industry.

CONCLUSIONS

The ascorbic acid content of the commercial orange juices tested was relatively stable over a two-week period, however, stability was dependent to some extent on the method of shaking adopted to mix the juice. The results obtained indicated that the majority of juices tested remained satisfactory sources of ascorbic acid over the storage period.

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NOVEMBER SUMMARY

STORAGES	Capacity Megalitres	Week Ending 25-11-81 Megalitres
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Hume Reservoir	3,038,000	3,040,000
Lake Victoria	680,000	679,000
Menindee Lakes	1,794,000	1,285,000
Burrinjuck	1,026,000	1,005,480
Blowering	1,628,000	1,448,920

WATER FLOWING TO SOUTH AUSTRALIA (River Murray)

Week ending 25-11-81	74,000
Monthly entitlement for November	180,000
Total for November to 25-11-81	859,000
Total for October	2,997,000

WATER QUALITY (River Murray)

(Average quality for week — total dissolved solids in parts per million)

	25-11-81	(26-11-80)
Swan Hill	173	125
Euston	154	176
Red Cliffs	155	258
Merbein	178	276
Lock 9	168	264
Lake Victoria	252	312
Berri	186	438
Waikerie	366	410
Mannum	234	456
Murray Bridge	216	426

DECEMBER, 1981

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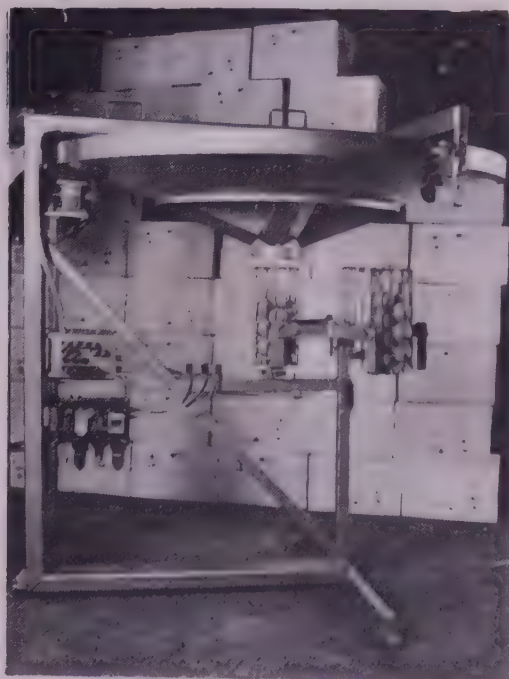
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